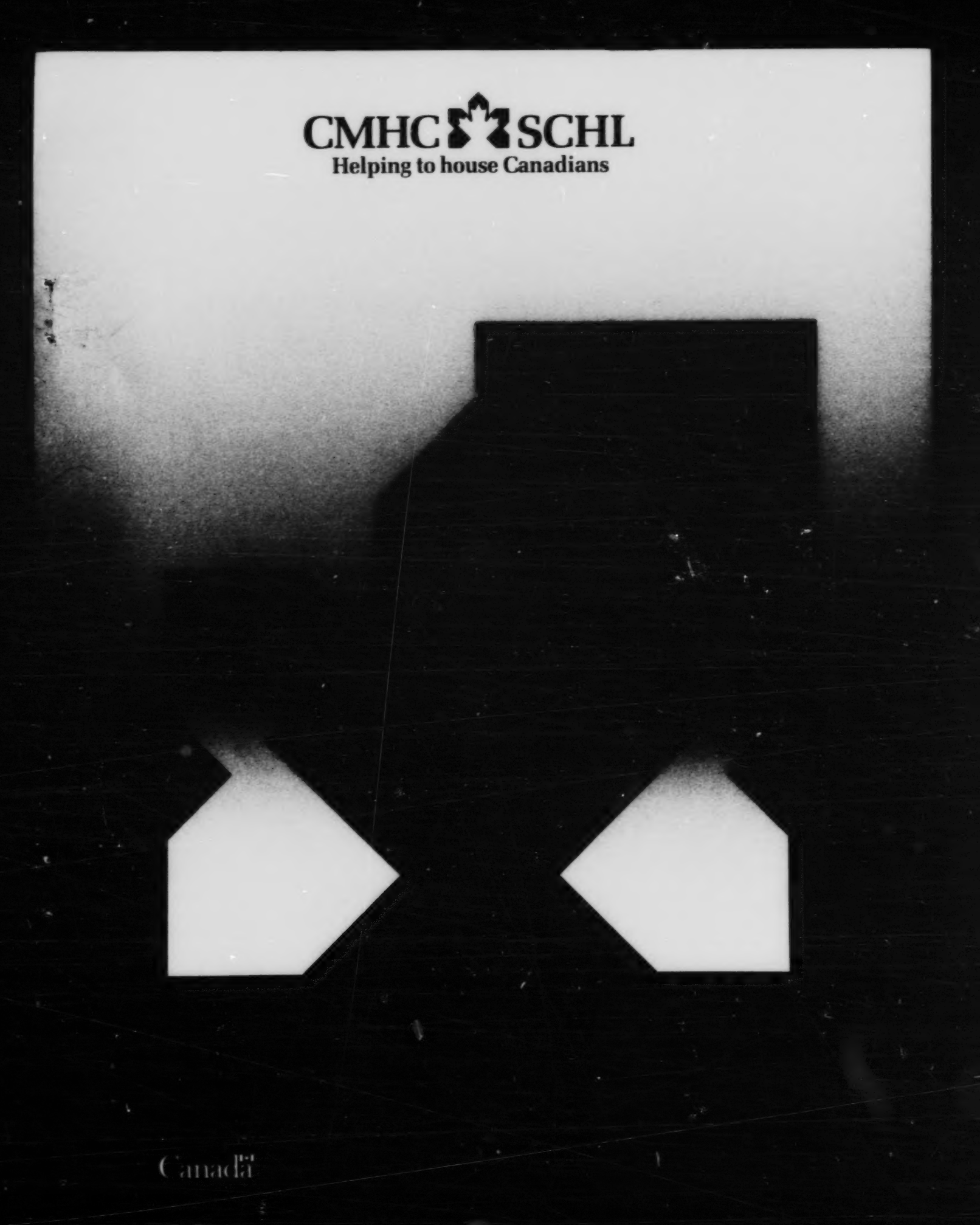

CMHC SCHL
Helping to house Canadians
Canada

91-06006/

REPORT ON THE MEASUREMENT OF THE AIR LEAKAGE OF THE TEST WALL PANELS

DRYING OF WALLS - ATLANTIC CANADA

85-536

REPORT ON THE MEASUREMENT OF THE AIR LEAKAGE OF THE TEST WALL PANELS

DRYING OF WALLS - ATLANTIC CANADA

Prepared For

Mr. R.D. Stapledon
Canada Mortgage and Housing Corporation

By
Oboe Engineering Ltd
Ottawa, Canada

INTRODUCTION

An experiment was undertaken to investigate the air leakage characteristics of the wall panels installed in the Atlantic Canada - Drying of Walls Project Test Huts. The huts are located in Fredericton, Halifax and St. John's, are referred to as House 1, 2 and 3 , respectively. In each house, eight different wall panel constructions are included on the south side, and repeated on the north side. A description of the panels is included in Appendix 3.

TEST PROCEDURE

The test equipment consisted of a fan system and a metering section. The metering section was a 25 mm tube with a pitot tube installed in the centre of flow. The pressure was measured using an Airflow Developments Ltd. MK6KD precision electronic monometer. The pitot/monometer system was calibrated at Forintek Canada against a mass flow metering system.

The test consisted of drilling a 25 mm diameter hole from the inside of the test hut, through the drywall and vapour barrier of each test panel, to insert the measurement system. The hole was located approximately 1 meter above the floor level, and centered in each 1200 mm wide panel. The fan and airflow diverter was used to induce a pressure difference between the cavity of each wall panel and the exterior. The pressure difference was stabilized at stages from 0 to 200 Pa pressure difference of wall depressurization, and the resultant airflow recorded. From the data collected, the coefficients of the equation:

$$Q = C \times p^N$$

were calculated in accordance with the procedures outlined in CGSB149.10, "Determination of the Airtightness of Envelope by theFan Depressurization Method".

RESULTS AND DISCUSSION

A summary of the data is presented in Tables 1 and 2. Based on the coefficients calculated, airflow at 5 and 25 Pa was calculated and included, to assist in the analysis. The measured data, and best line fit is included graphically in Appendix 1. The moisture content measured in each wall panel since March 1986 is included for reference in Appendix 2.

Upon examination, it is apparent that the north panels are consistantly less resistant to airflow than their south wall counterparts. In most instances, the strapped panels are less resistant to airflow than their non-strapped counterparts, particularly at low wall cavity to exterior pressure differences.

TABLES

TABLE 1

AIR FLOW(L/MIN) AT: 5 Pa

	PANEL #1, NON-STRAPPED WAFERBOARD SHEATHING				PANEL #2, STRAPPED WAFERBOARD SHEATHING				PANEL #3, NON-STRAPPED RIGID FIBERGLASS SHEATHING				PANEL #4, STRAPPED RIGID FIBERGLASS SHEATHING			
	SOUTH		NORTH		SOUTH		NORTH		SOUTH		NORTH		SOUTH		NORTH	
	C	N	C	N	C	N	C	N	C	N	C	N	C	N	C	N
HOUSE #1,	4.21	0.7428	3.269	0.9434	0.8768	1.024	1.386	1.003	1.625	0.9032	0.9414	1.165	0.9237	0.942	0.4761	1.185
HOUSE #2,	0.7464	0.9482	7.815	0.6267	0.4251	1.154	1.05	0.9917	0.721	0.8761	1.888	0.9503	2.814	0.535	3.273	3.7146
HOUSE #3,	0.6605	1.053	5.19	0.6235	0.7514	1.154	4.523	0.754	0.6885	1.285	2.694	0.8059	1.185	1.037	3.792	0.8249
AIR FLOW(L/MIN):																
HOUSE #1:		13.9148		14.9173		4.55665		6.96354		6.91936		6.13866		4.28688		2.93718
HOUSE #2:		3.38955		21.2285		2.72334		5.18033		3.04987		8.71431		9.36646		13.4798
HOUSE #3:		3.59656		14.1525		4.31373		15.2212		4.17618		8.71353		5.86488		14.3837
AVERAGE,SOUTH,NORTH:		6.96697		16.7661		4.83124		9.12178		4.71511		7.85558		6.47911		10.2359
AVERAGE BOTH:			11.8665				6.57647				6.28531				8.35954	

	PANEL #5, NON-STRAPPED POLYSTYRENE SHEATHING				PANEL #6, STRAPPED POLYSTYRENE SHEATHING				PANEL #7, NON-STRAPPED CELLULOSE				PANEL #8, NON-STRAPPED EXPANDED POLYSTYRENE			
	SOUTH		NORTH		SOUTH		NORTH		SOUTH		NORTH		SOUTH		NORTH	
	C	N	C	N	C	N	C	N	C	N	C	N	C	N	C	N
HOUSE #1,	1.184	0.944	0.6989	1.026	1.03	0.8989	0.6534	1.068	0.4657	0.898	0.5372	0.8901	7.426	0.7369	25.31	3.5384
HOUSE #2,	0.3269	1.007	1.589	0.9909	3.134	0.7531	1.712	0.8813	1.181	0.9968	2.175	0.8964	10.28	0.851	21.4	0.6767
HOUSE #3,	0.3134	1.277	1.6	0.8689	1.133	0.9804	1.766	0.9058	0.5149	0.9971	5.156	0.8225	1.321	1.024	16.9	0.6371
AIR FLOW(L/MIN):																
HOUSE #1:		5.40977		3.64383		4.37664		3.64484		1.97597		2.25055		24.3122		60.3029
HOUSE #2:		1.65301		7.62948		10.5315		7.07141		5.87466		9.20403		40.4405		63.6131
HOUSE #3:		2.44728		6.67012		5.48788		7.58783		2.56251		19.3738		6.86511		47.1194
AVERAGE,SOUTH,NORTH:		3.17002		6.05448		6.79918		6.10136		3.47105		10.2764		23.8726		56.9785
AVERAGE BOTH:			4.61225				6.45023				6.87373				40.4255	

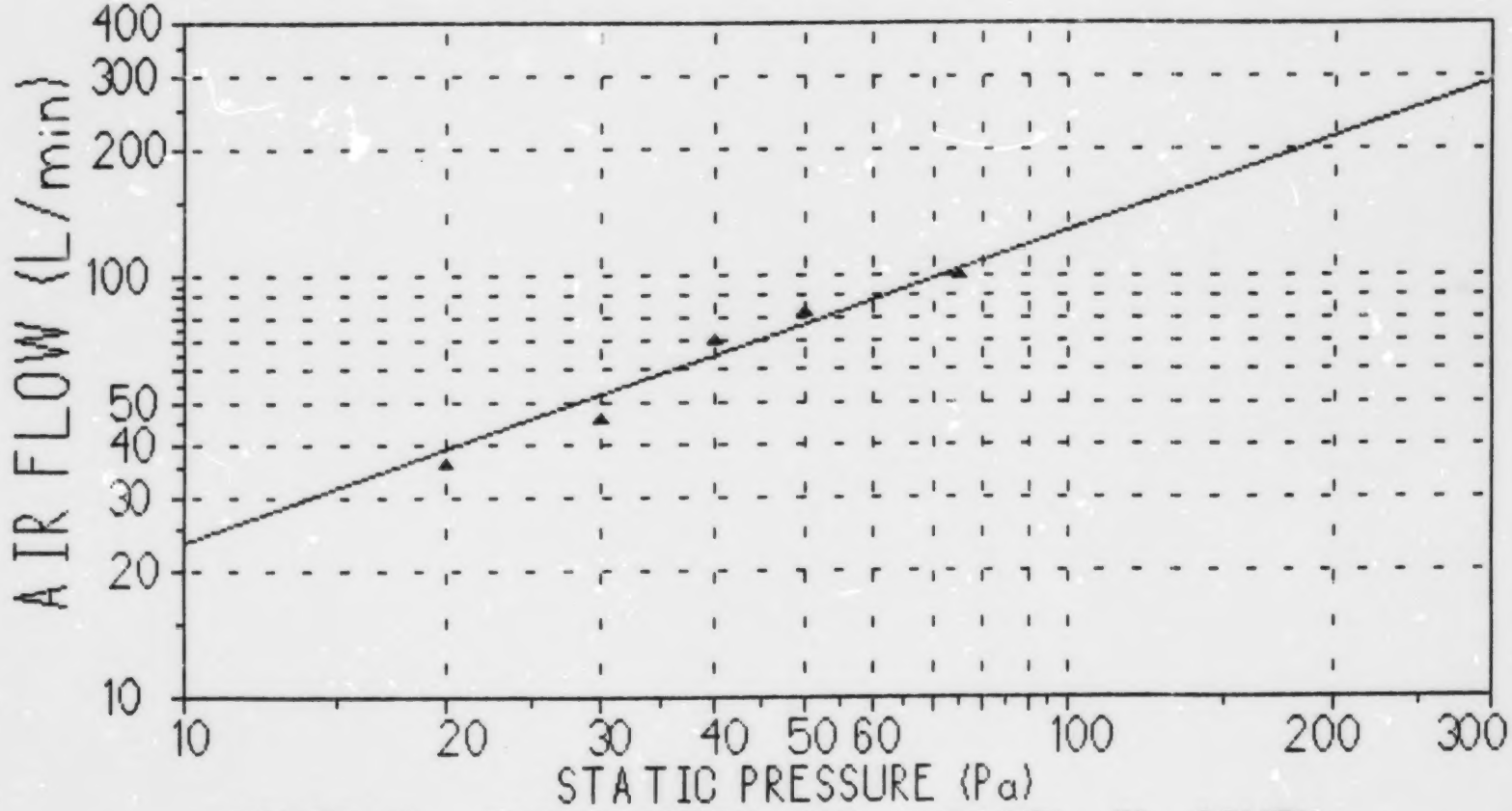
TABLE 2

AIR FLOW(L/MIN) AT: 25 Pa

	PANEL #1, NON-STRAPPED WAFERBOARD SHEATHING				PANEL #2, STRAPPED WAFERBOARD SHEATHING				PANEL #3, NON-STRAPPED RIGID FIBERGLASS SHEATHING				PANEL #4, STRAPPED RIGID FIBERGLASS SHEATHING			
	SOUTH		NORTH		SOUTH		NORTH		SOUTH		NORTH		SOUTH		NORTH	
	C	N	C	N	C	N	C	N	C	N	C	N	C	N	C	N
HOUSE #1,	4.21	0.7428	3.268	0.9434	0.8768	1.024	1.386	1.003	1.625	0.9082	0.9414	1.105	0.9237	0.942	0.4961	1.105
HOUSE #2,	0.7464	0.9402	7.815	0.6209	0.4251	1.154	1.05	0.9917	0.721	0.8761	1.888	0.9503	2.014	0.955	3.093	0.9146
HOUSE #3,	0.6605	1.053	5.19	0.6233	0.7514	1.154	4.523	0.754	0.6005	1.205	2.094	0.8059	1.105	1.037	3.792	0.8249
AIR FLOW(L/MIN):																
HOUSE #1:		45.9589		68.8924		23.6805		34.9862		29.4631		40.0269		19.1597		17.3097
HOUSE #2:		15.3927		57.6646		17.4467		25.5579		12.9811		40.2220		43.5604		58.7402
HOUSE #3:		19.5841		38.5925		30.8385		51.2239		29.0422		36.2586		31.1190		53.9546
AVERAGE,SOUTH,NORTH:		26.9892		54.7832		23.9885		37.2560		23.0021		38.8365		31.2797		43.3615
AVERAGE BOTH:			40.8862				30.6223				31.3193				37.3206	

	PANEL #5, NON-STRAPPED POLYSTYRENE SHEATHING				PANEL #6, STRAPPED POLYSTYRENE SHEATHING				PANEL #7, NON-STRAPPED CELLULOSE				PANEL #8, NON-STRAPPED EXPANDED POLYSTYRENE			
	SOUTH		NORTH		SOUTH		NORTH		SOUTH		NORTH		SOUTH		NORTH	
	C	N	C	N	C	N	C	N	C	N	C	N	C	N	C	N
HOUSE #1,	1.184	0.944	0.6989	1.026	1.03	0.8989	0.6534	1.068	0.4657	0.898	0.5372	0.8701	7.426	0.7369	25.31	0.5384
HOUSE #2,	0.3269	1.007	1.589	0.9909	3.134	0.7531	1.712	0.8813	1.181	0.9968	2.175	0.8964	10.28	0.851	21.4	0.6769
HOUSE #3,	0.3134	1.277	1.6	0.8889	1.133	0.9804	1.766	0.9058	0.5149	0.9971	5.156	0.8225	1.321	1.024	16.9	0.6371
AIR FLOW(L/MIN):																
HOUSE #1:		24.7176		18.9977		15.5971		20.3319		8.38489		9.42849		79.5970		143.200
HOUSE #2:		8.35873		38.5782		35.3965		29.2084		29.2224		38.9558		159.088		189.094
HOUSE #3:		19.1103		27.9736		26.5931		32.6020		12.7528		72.7978		35.6774		131.375
AVERAGE,SOUTH,NORTH:		17.3955		28.5165		26.8602		27.3809		16.7664		40.3940		91.4544		154.556
AVERAGE BOTH:			22.9560				27.1205				28.5902				123.005	

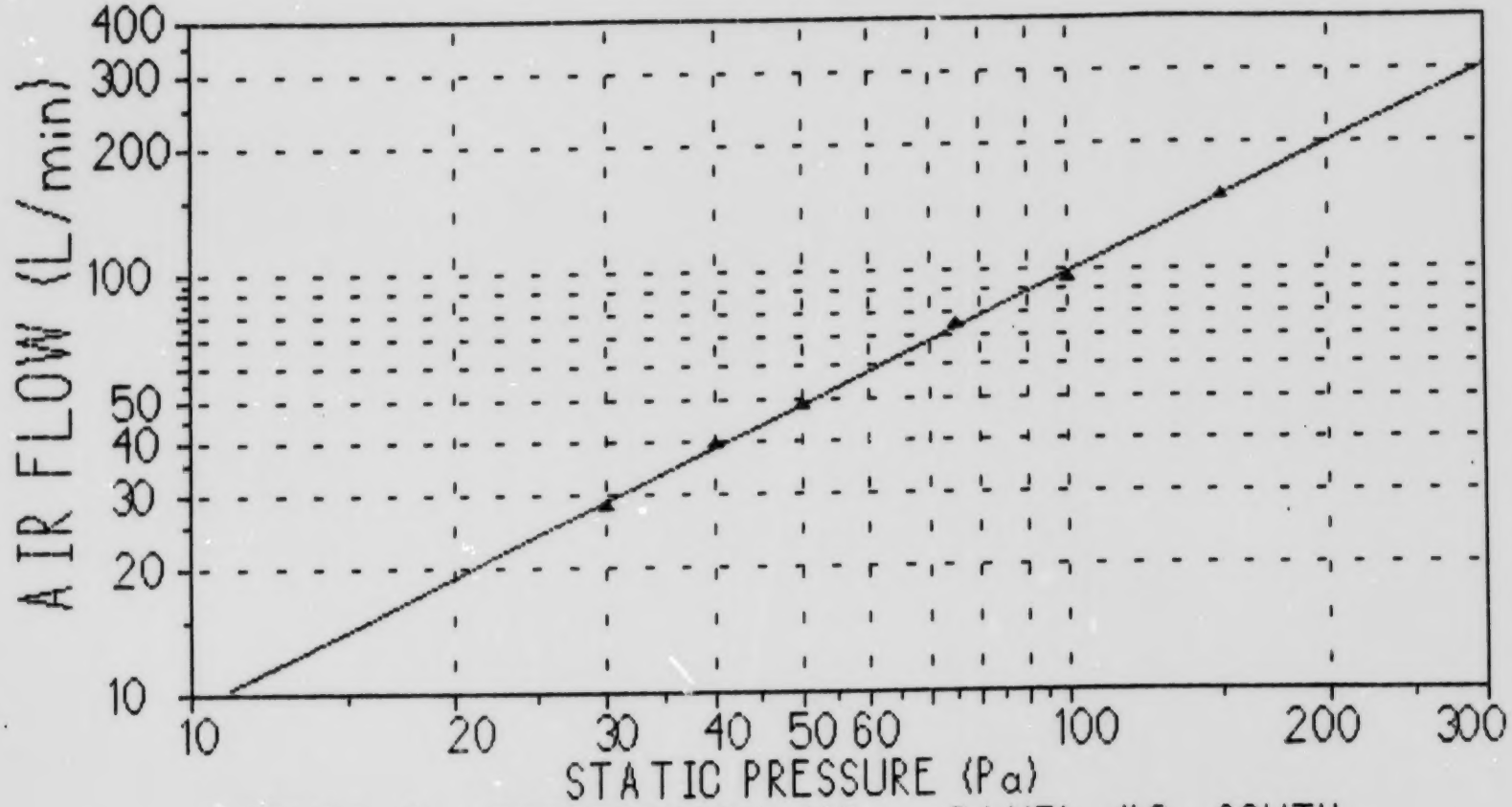
APPENDIX 1



HOUSE #1 - FREDERICTON N.B. - PANEL #1 SOUTH.

·FOR THESE POINTS, Q(L/min) = 4.210 * P(Pa)**.7428;
REGRESSION COEF = .970; ERRORS: MEAN = 8.12%, MAX = 14.9%.

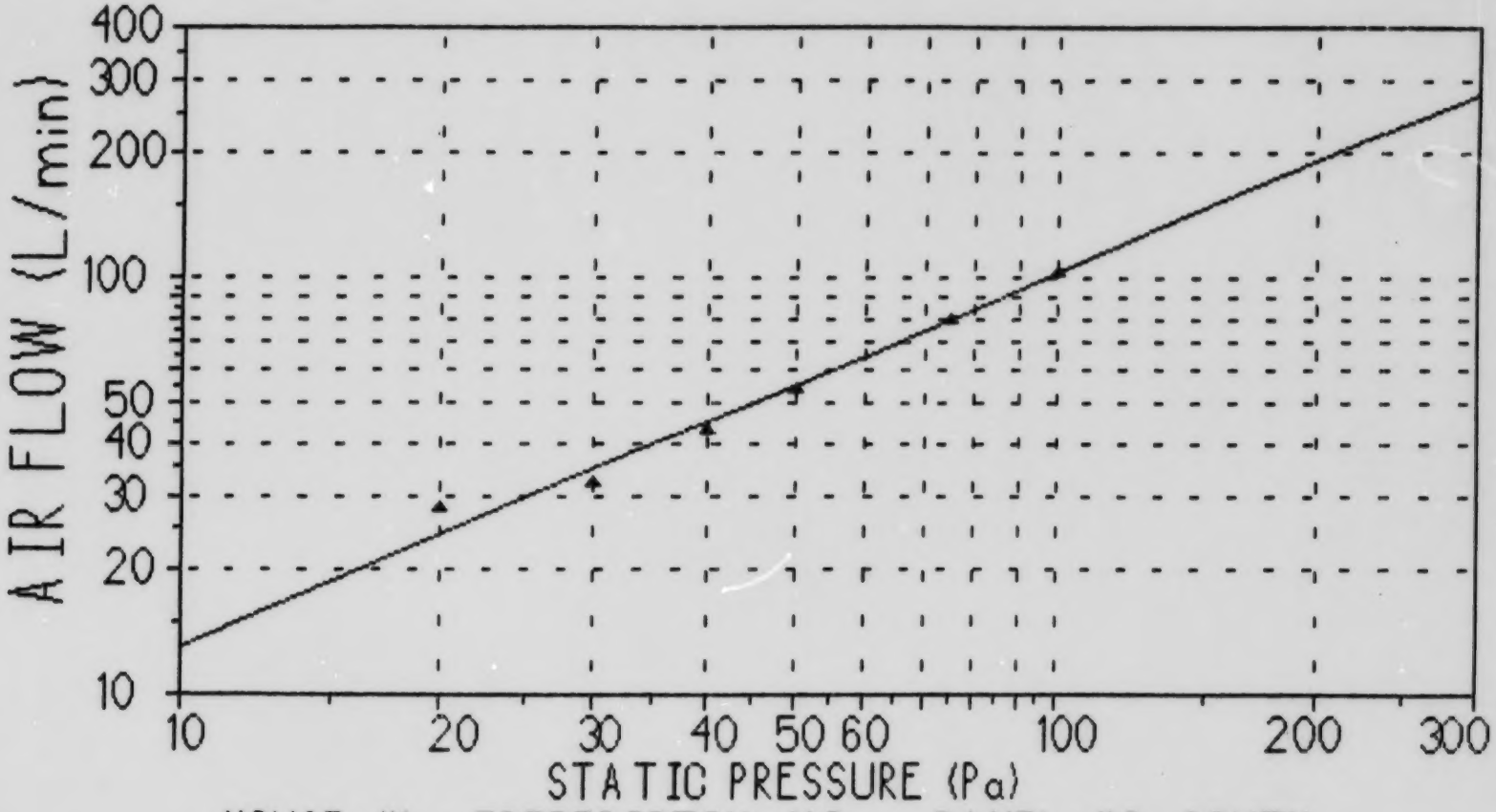
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #2 SOUTH.

.FOR THESE POINTS, Q(L/min) = .8768 * P(Pa)**1.024;
REGRESSION COEF = .999; ERRORS: MEAN = 1.80%, MAX = 3.09%.

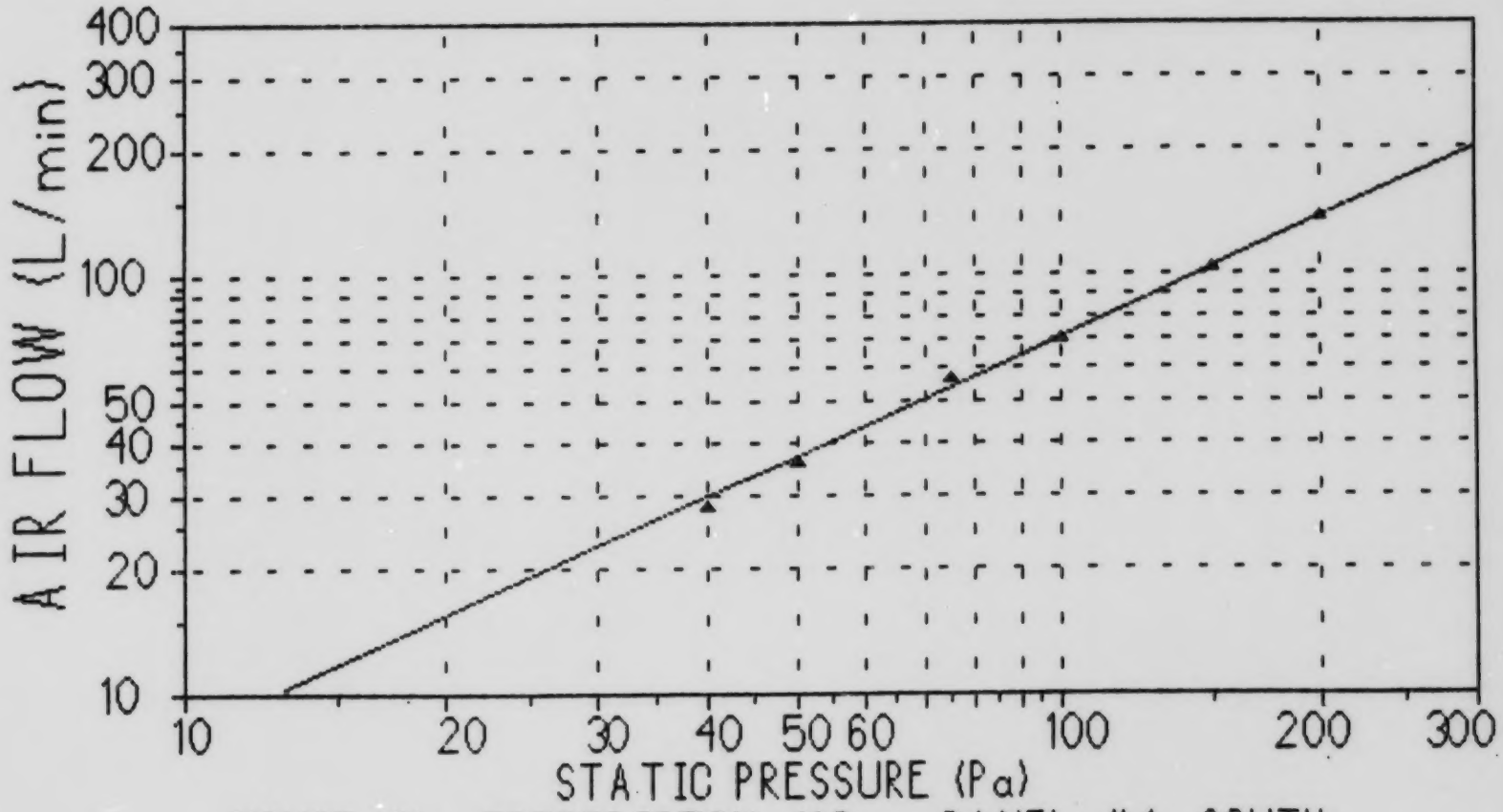
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #3 SOUTH.

· FOR THESE POINTS, Q(L/min) = 1.625 * P(Pa)**.9002;
REGRESSION COEF = .995; ERRORS: MEAN = 5.01%, MAX = 14.0%.

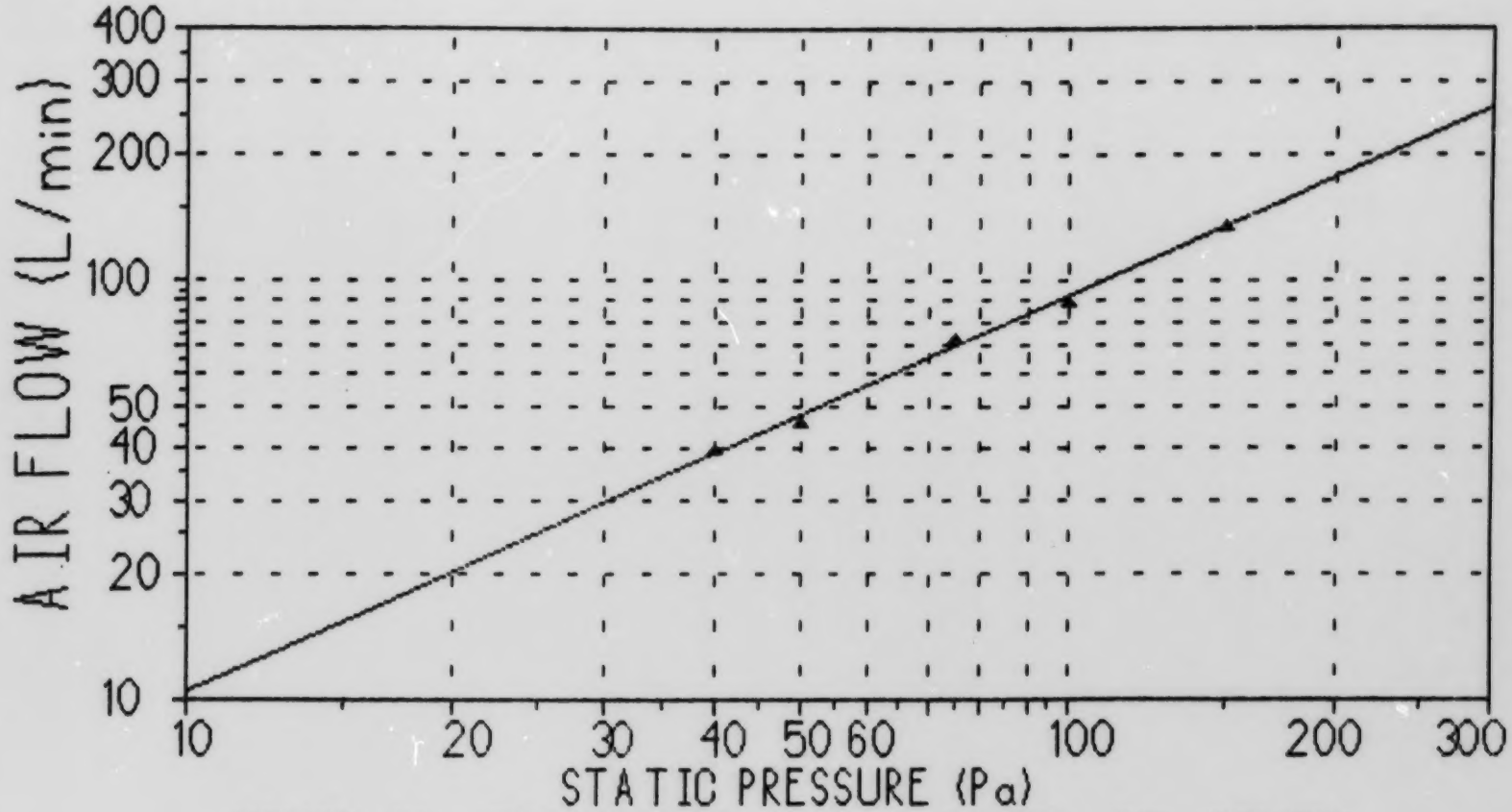
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #4 SOUTH.

· FOR THESE POINTS, Q(L/min) = .9237 * P(Pa)**.9420;
REGRESSION COEF = .998; ERRORS: MEAN = 2.48%, MAX = 6.36%.

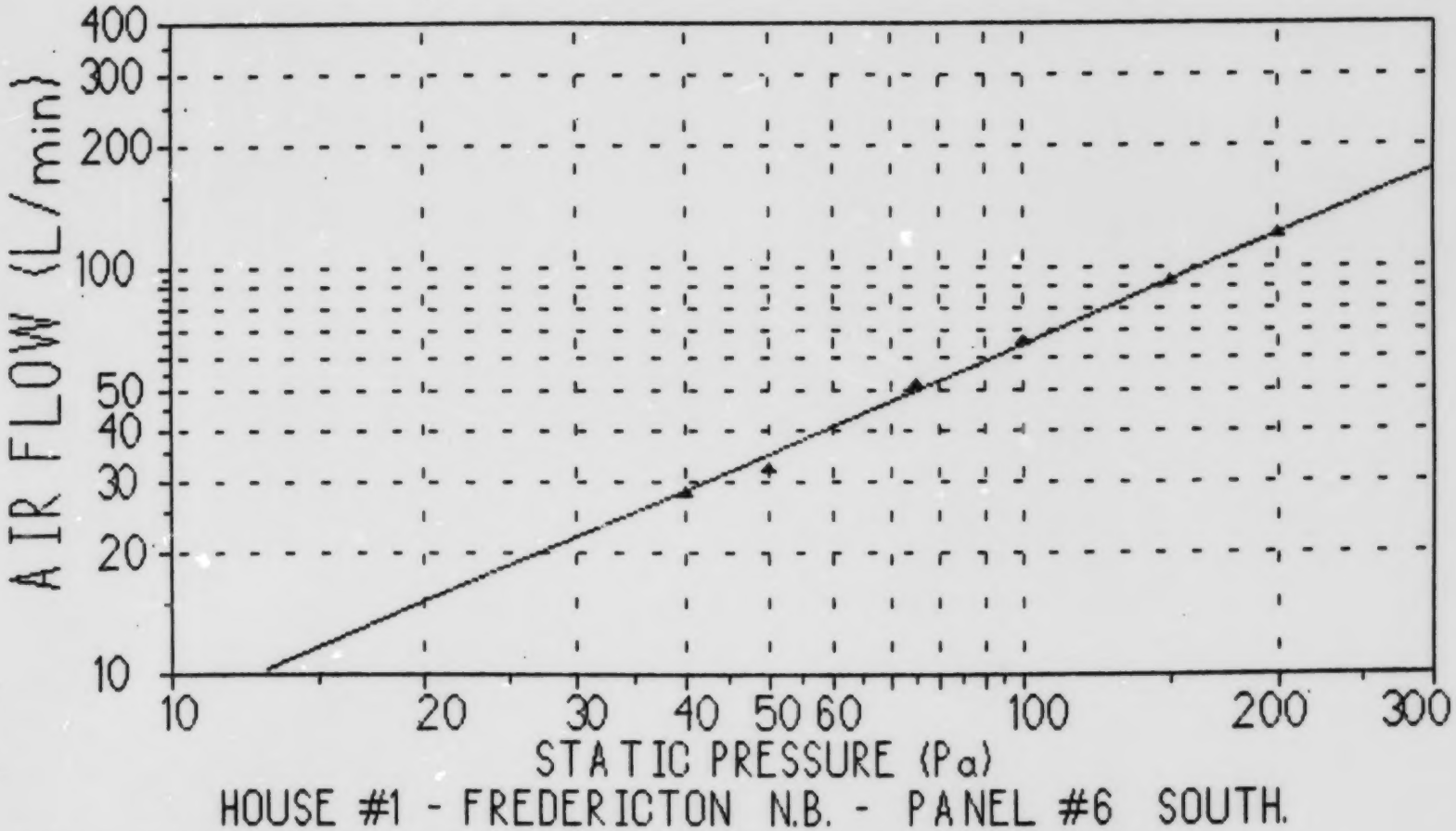
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #5 SOUTH.

· FOR THESE POINTS, Q(L/min) = 1.184 * P(Pa)** .9440;
REGRESSION COEF = .998; ERRORS: MEAN = 2.65%, MAX = 3.85%.

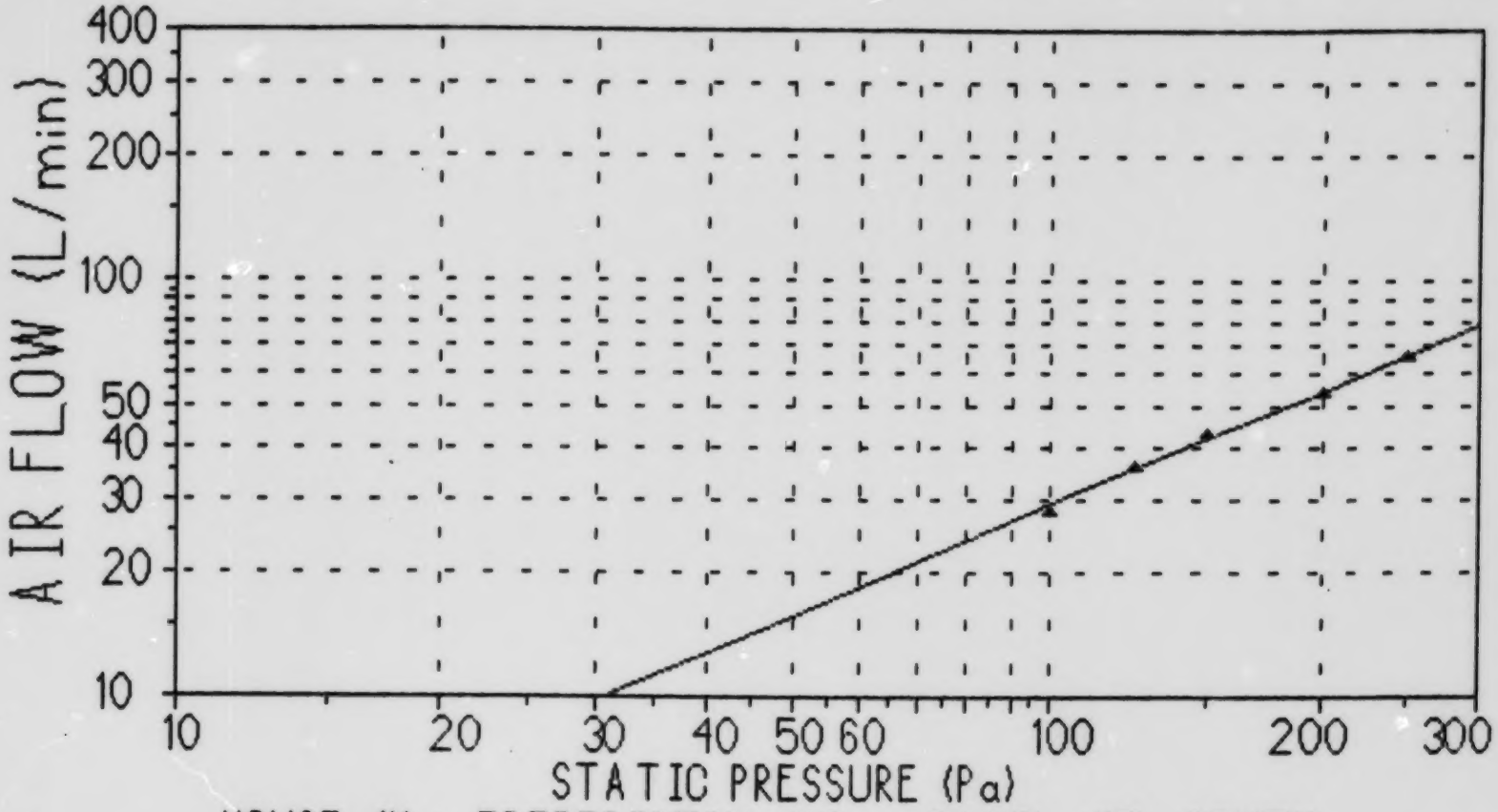
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #6 SOUTH.

·FOR THESE POINTS, Q(L/min) = 1.030 * P(Pa)** .8989;
REGRESSION COEF = .998; ERRORS: MEAN = 2.52%, MAX = 7.72%.

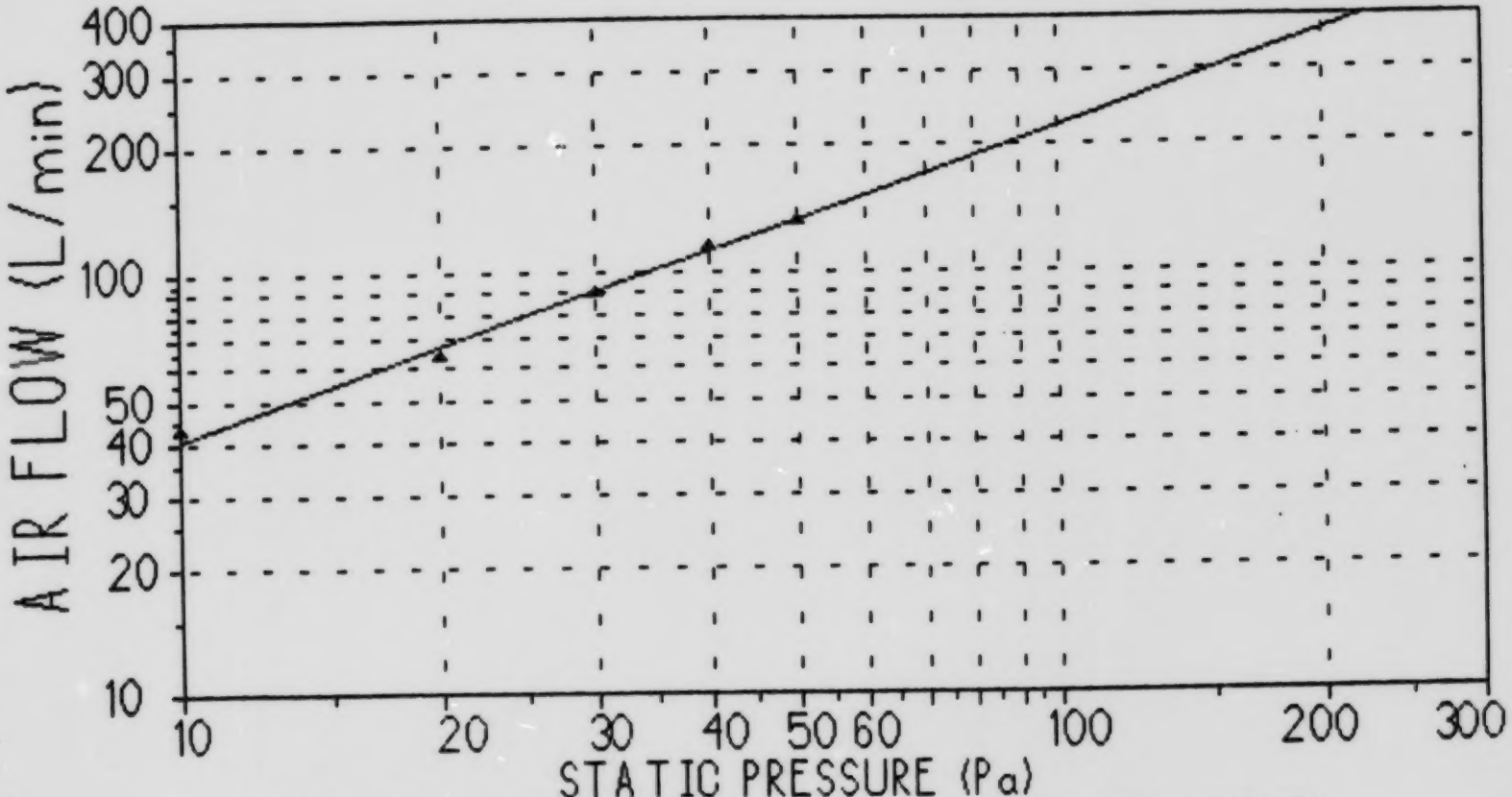
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #7 SOUTH.

FOR THESE POINTS, Q(L/min) = .4657 * P(Pa)**.8980;
REGRESSION COEF = .998; ERRORS: MEAN = 1.47%, MAX = 3.81%.

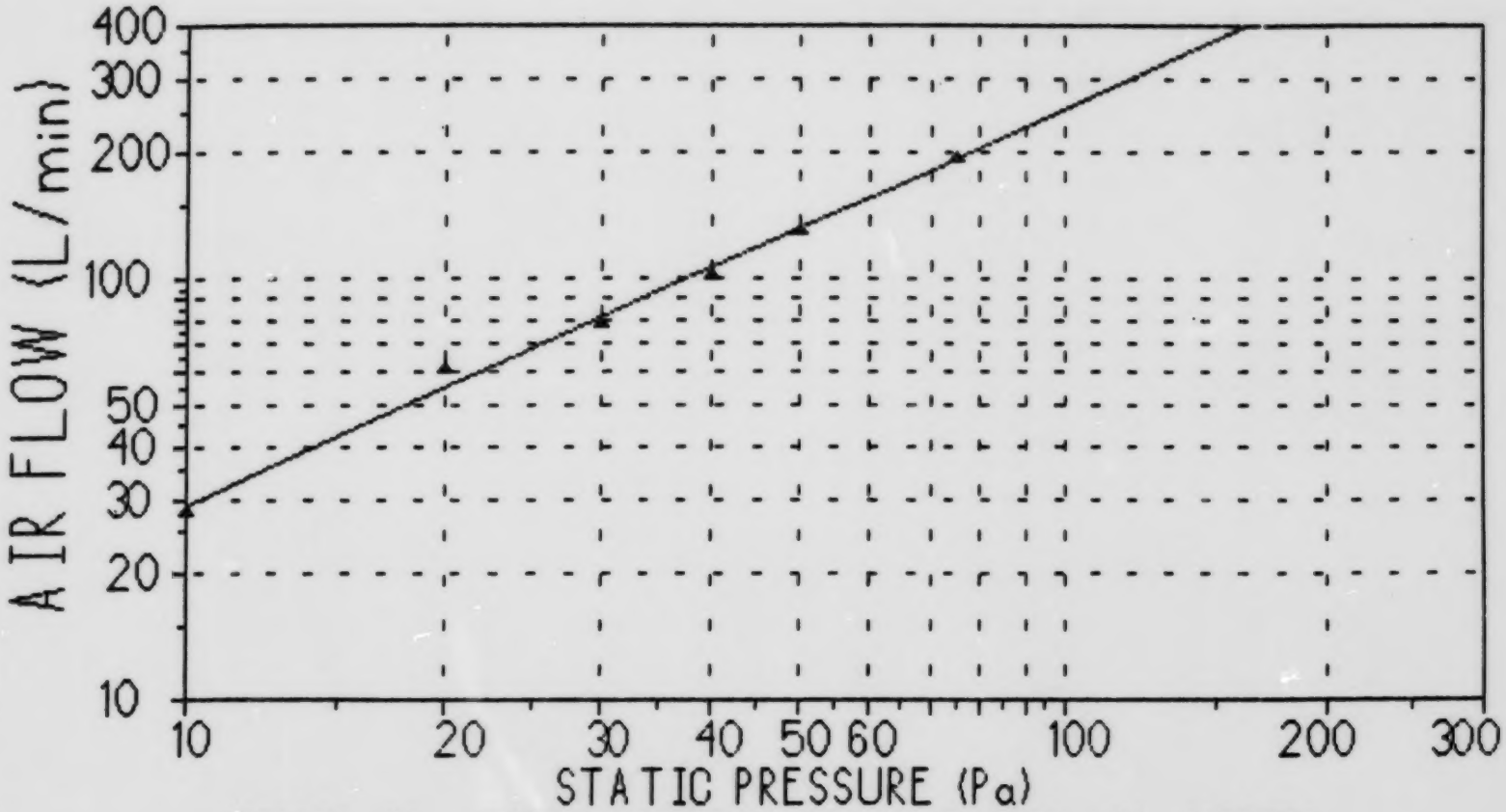
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #8 SOUTH.

FOR THESE POINTS, Q(L/min) = 7.426 * P(Pa)** .7369;
REGRESSION COEF = .996; ERRORS: MEAN = 2.98%, MAX = 5.75%.

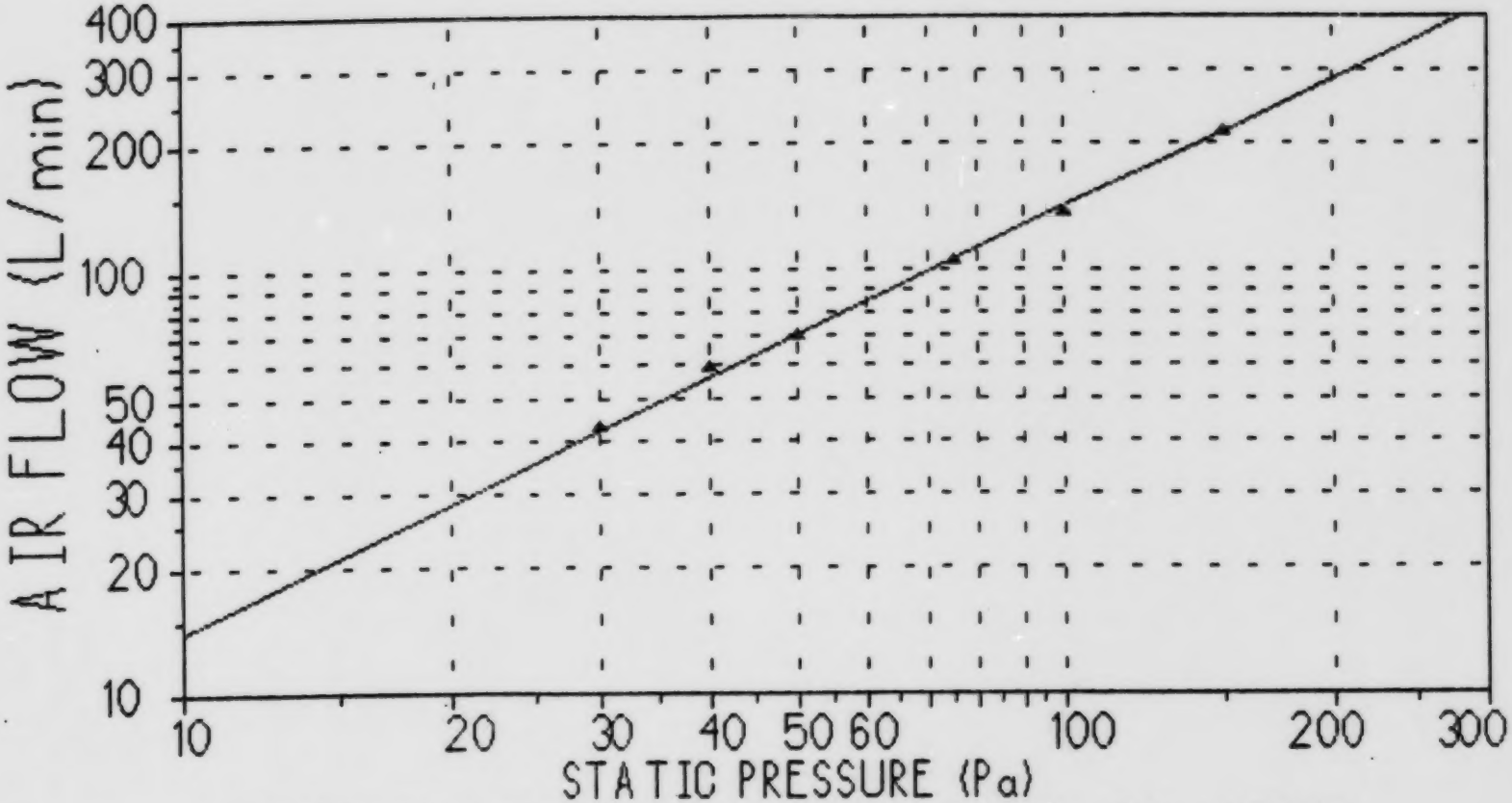
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #1 NORTH.

·FOR THESE POINTS, Q(L/min) = 3.268 * P(Pa)**.9434;
REGRESSION COEF = .996; ERRORS: MEAN = 3.68%, MAX = 10.3%.

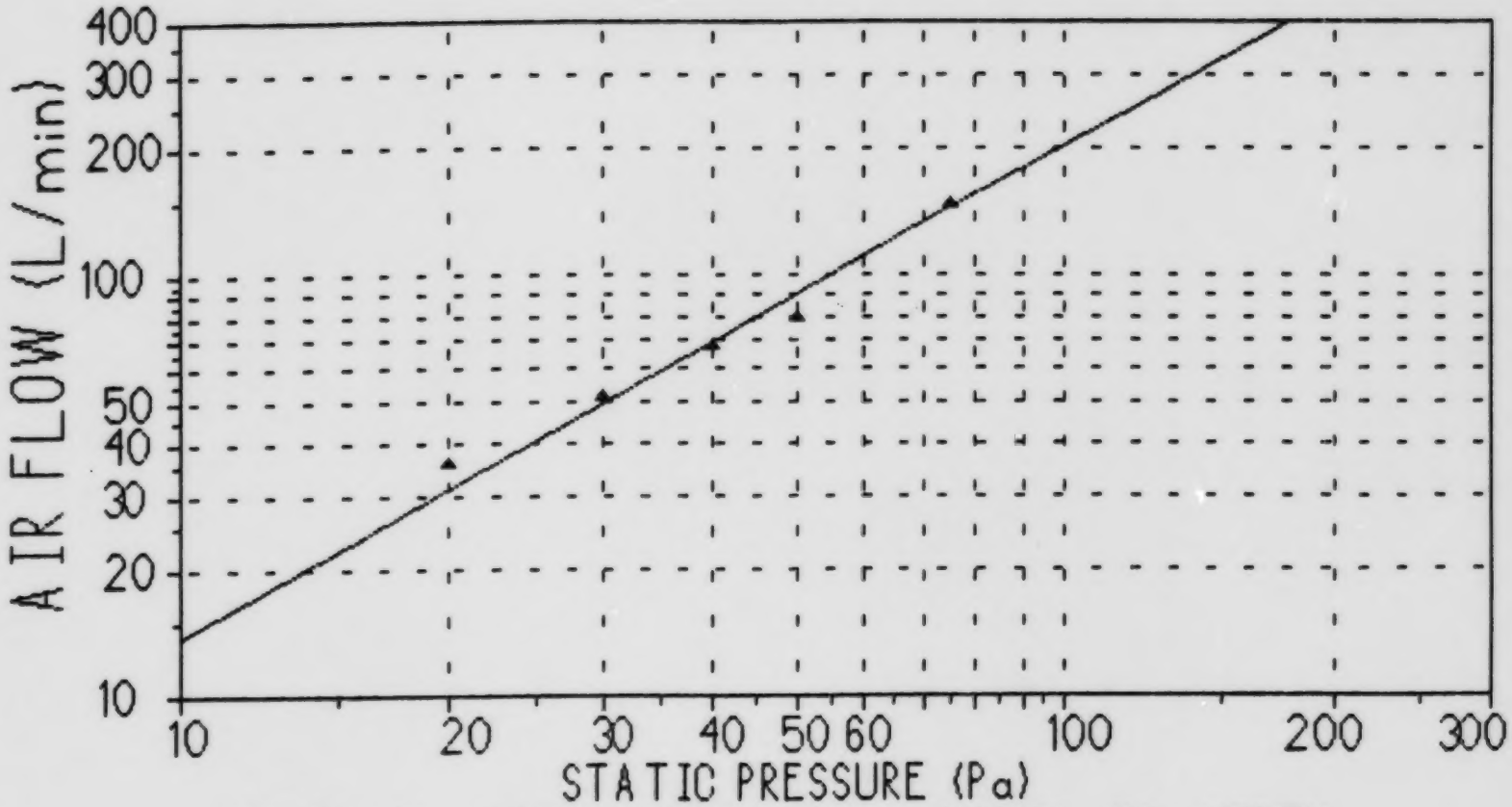
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #2 NORTH.

FOR THESE POINTS, Q(L/min) = 1.386 * P(Pa)**1.003;
REGRESSION COEF = .999; ERRORS: MEAN = 1.91%, MAX = 5.08%.

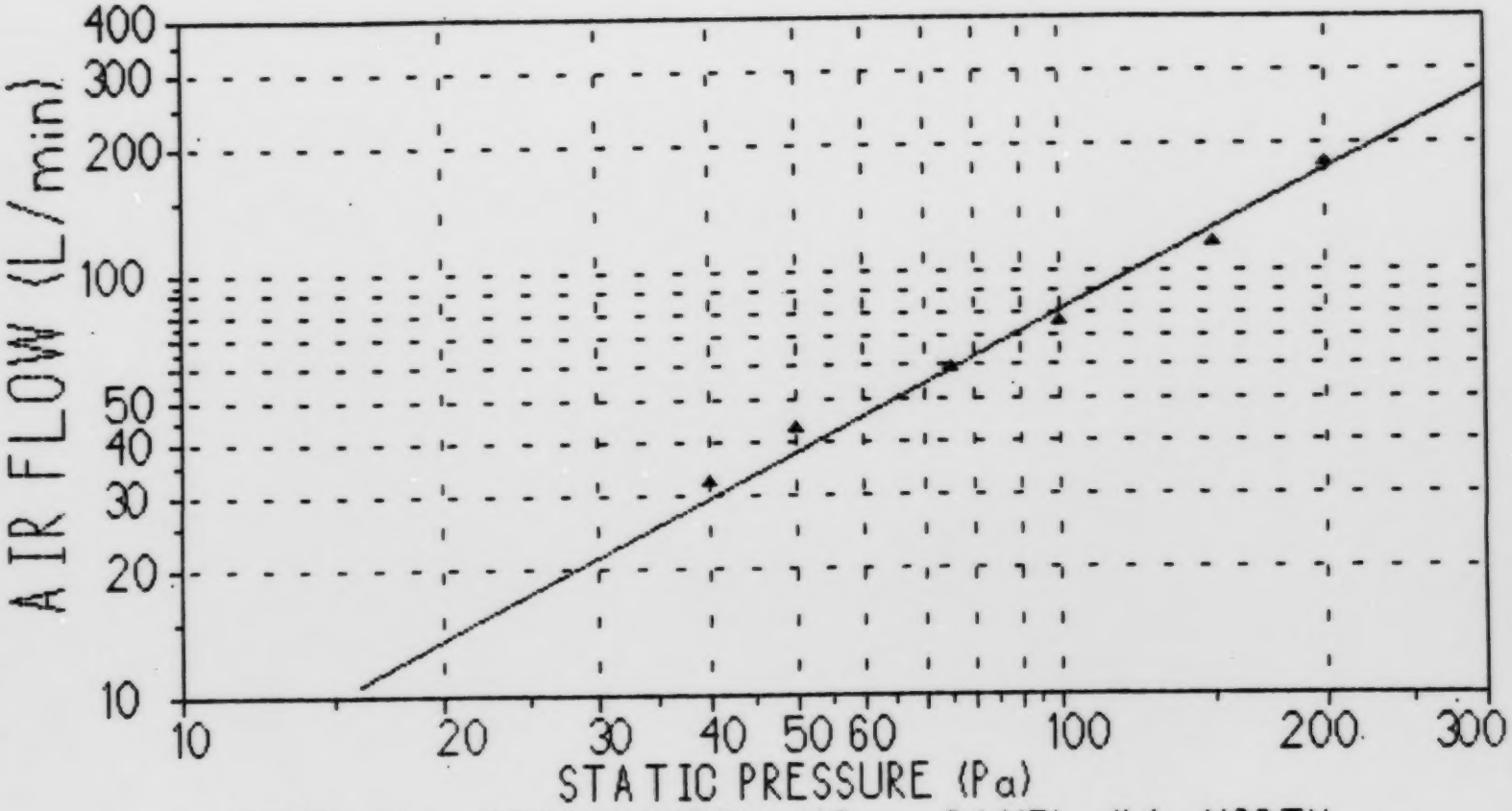
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #3 NORTH.

FOR THESE POINTS, Q(L/min) = .9414 * P(Pa)**1.165;
REGRESSION COEF = .989; ERRORS: MEAN = 6.82%, MAX = 14.0%.

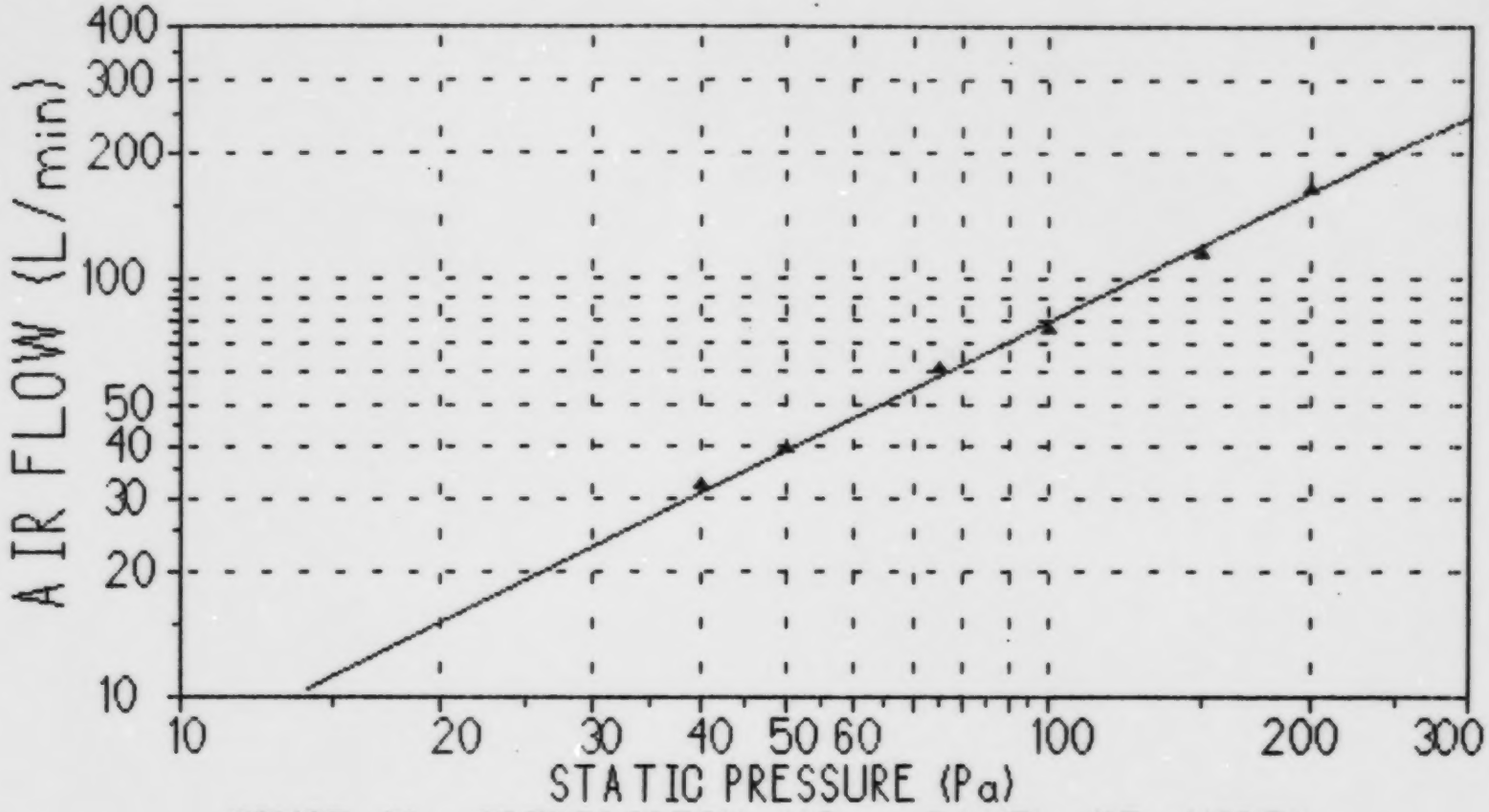
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #4 NORTH.

FOR THESE POINTS, Q(L/min) = .4961 * P(Pa)**1.105;
REGRESSION COEF = .992; ERRORS: MEAN = 6.52%, MAX = 12.3%.

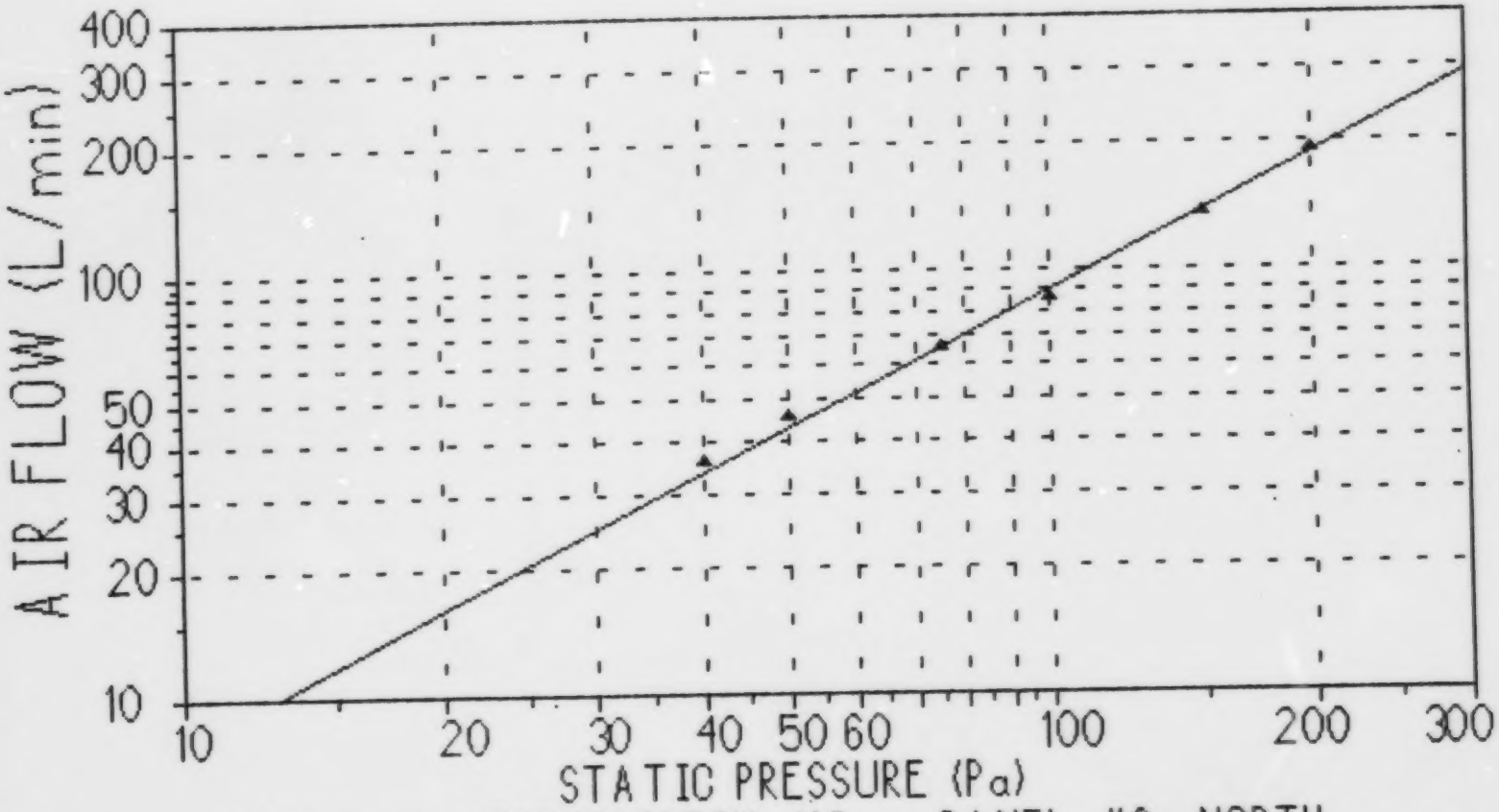
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #5 NORTH.

FOR THESE POINTS, Q(L/min) = .6989 * P(Pa)**1.026;
REGRESSION COEF = .997; ERRORS: MEAN = 3.23%, MAX = 4.49%.

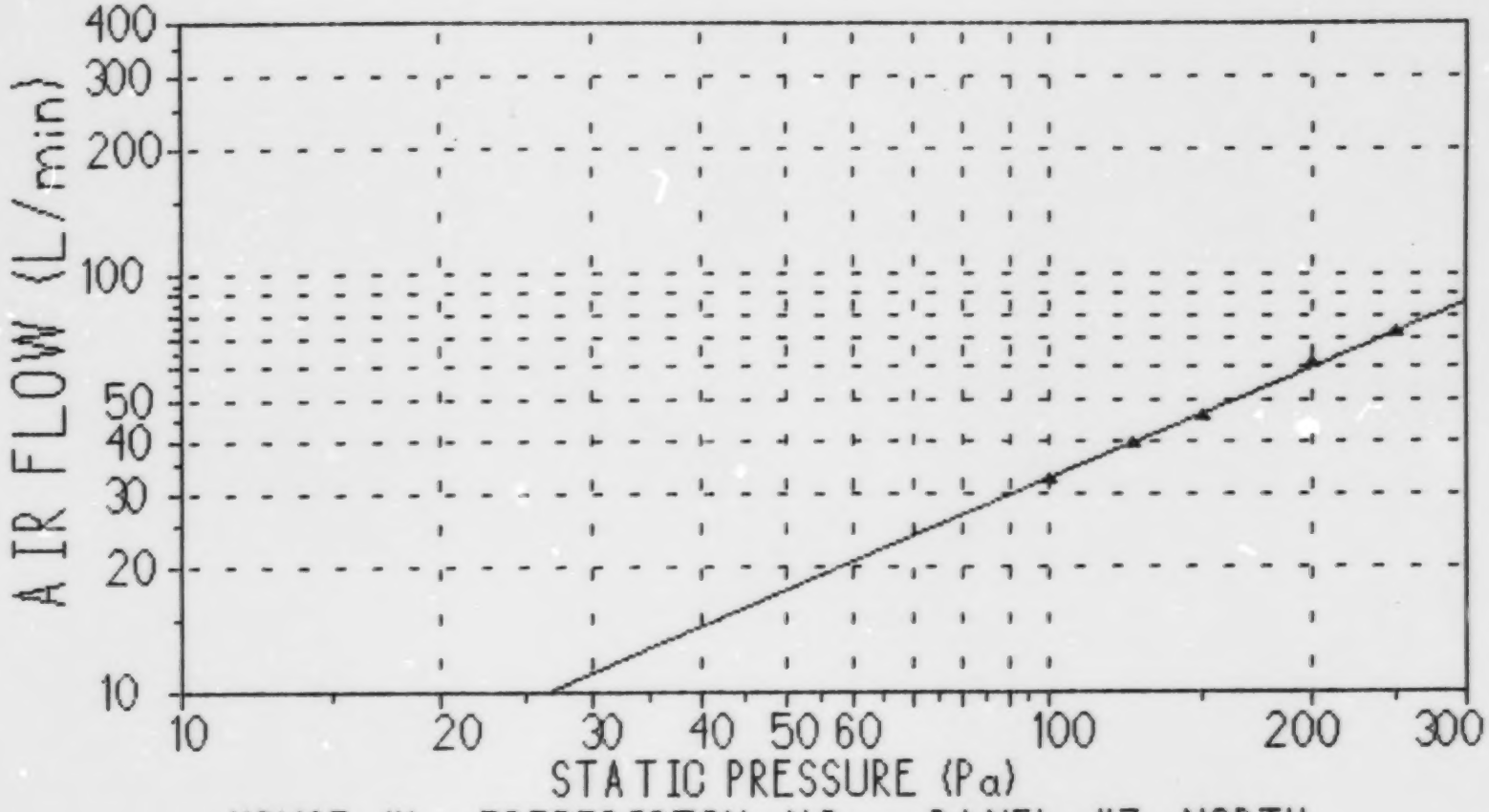
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #6 NORTH.

FOR THESE POINTS, Q(L/min) = .6534 * P(Pa)** 1.068;
REGRESSION COEF = .998; ERRORS: MEAN = 3.52%, MAX = 6.63%.

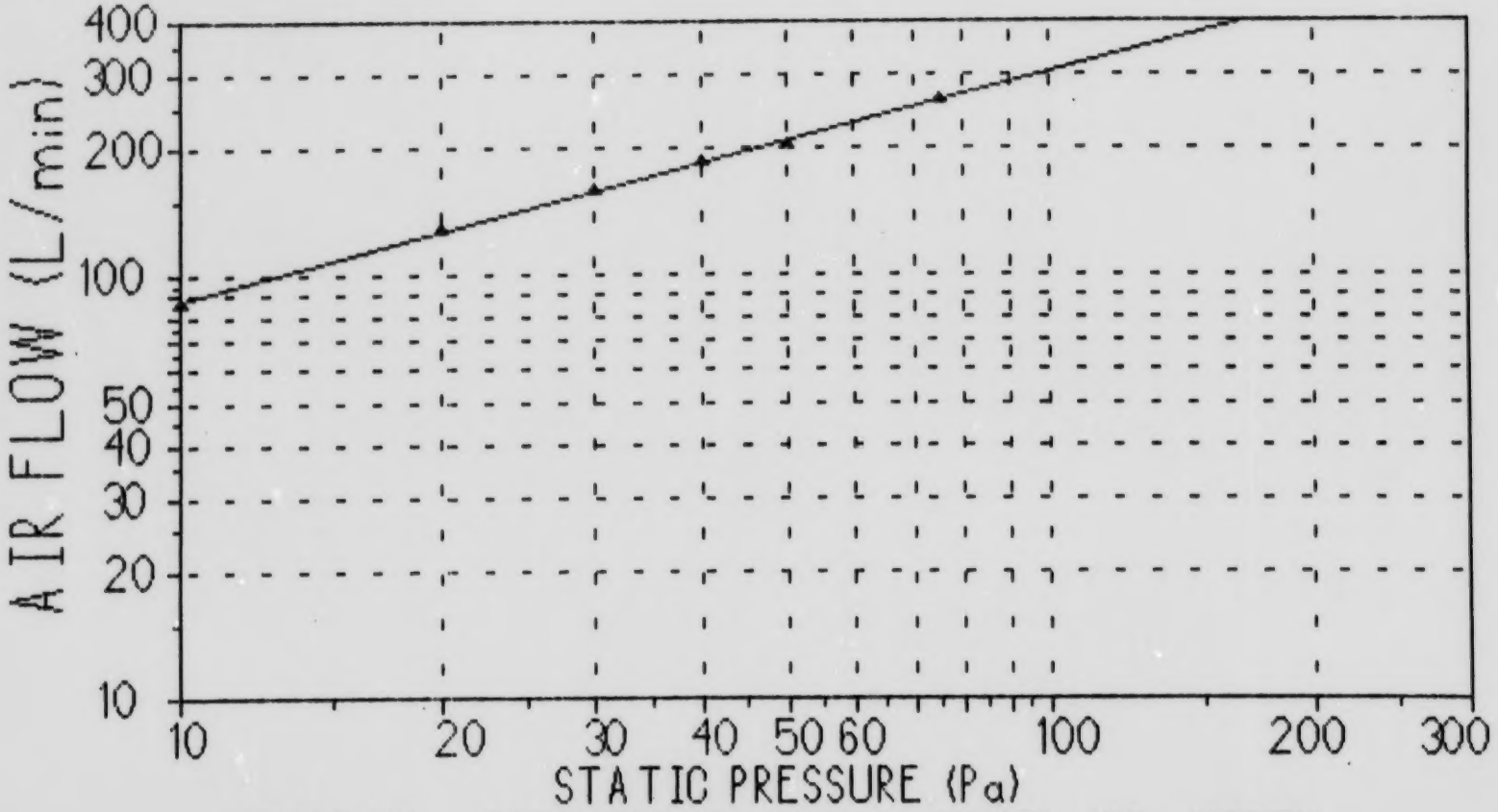
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #7 NORTH.

FOR THESE POINTS, Q(L/min) = .5372 * P(Pa)**.8901;
REGRESSION COEF = .998; ERRORS: MEAN = 1.14%, MAX = 2.49%.

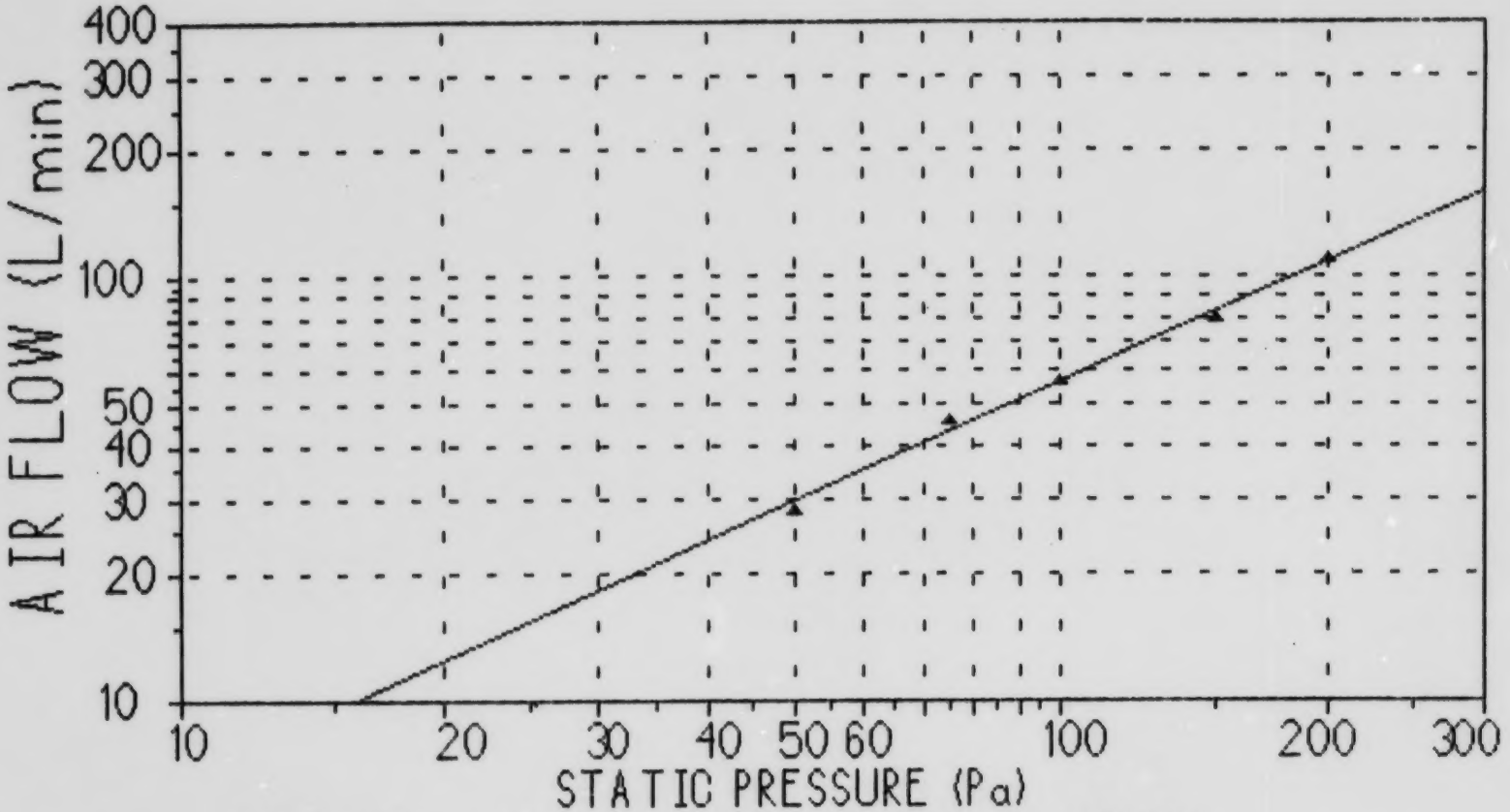
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #1 - FREDERICTON N.B. - PANEL #8 NORTH.

FOR THESE POINTS, Q(L/min) = 25.31 * P(Pa)**.5384;
REGRESSION COEF = .998; ERRORS: MEAN = 1.25%, MAX = 2.31%.

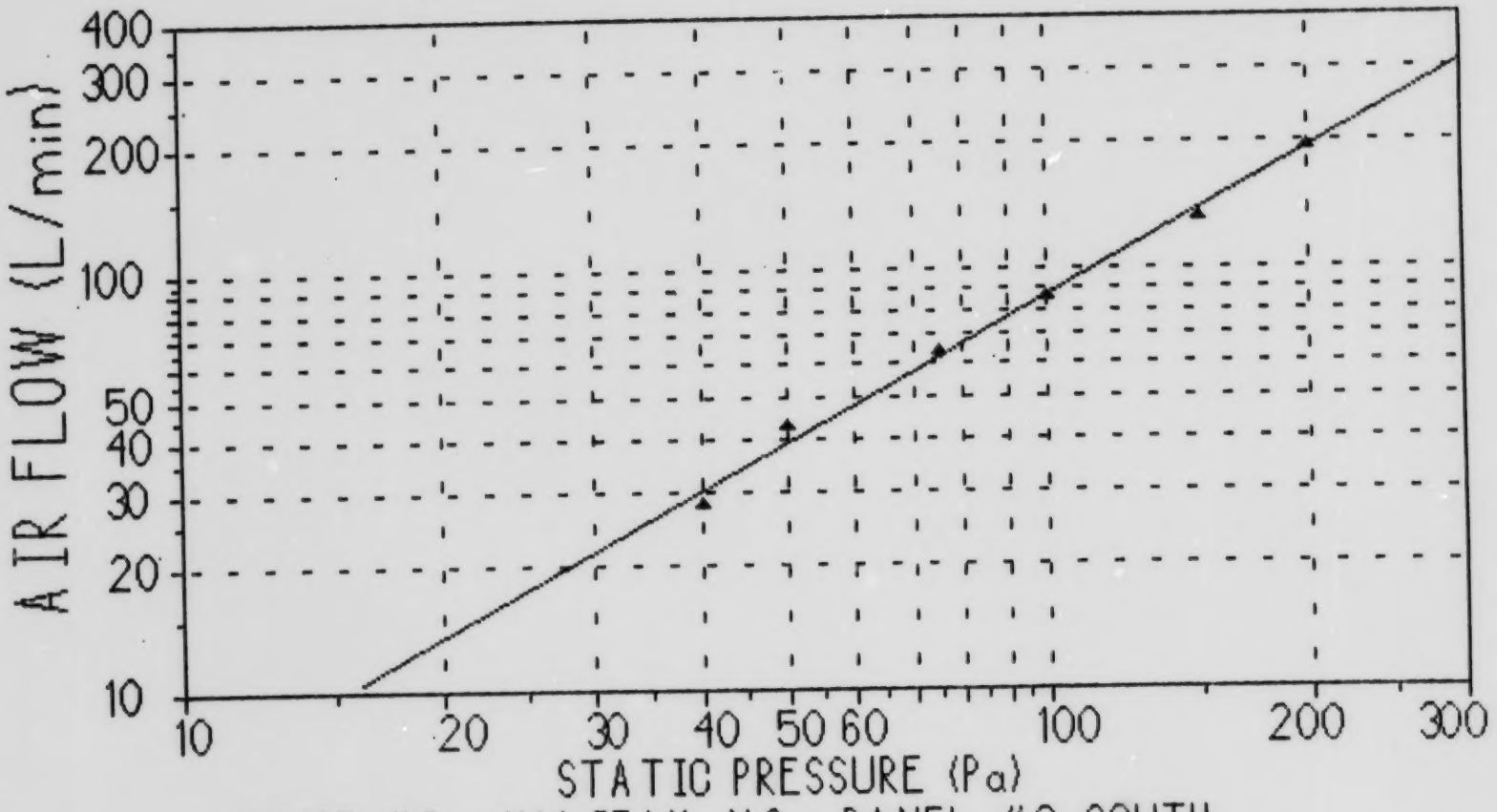
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #1 SOUTH.

FOR THESE POINTS, Q(L/min) = .7464 * P(Pa)**.9402;
REGRESSION COEF = .996; ERRORS: MEAN = 3.15%, MAX = 5.62%.

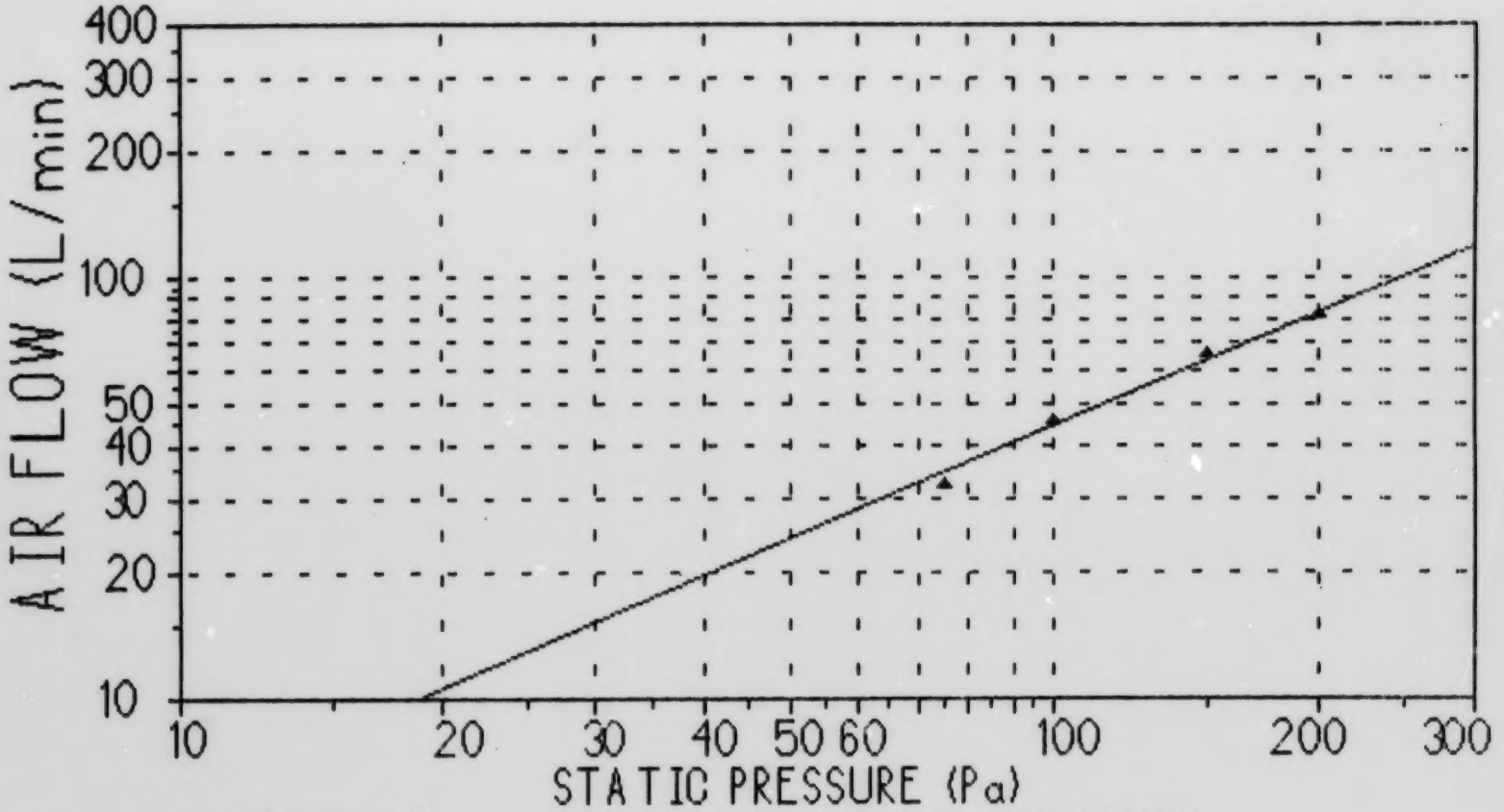
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #2 SOUTH.

FOR THESE POINTS, Q(L/min) = .4251 * P(Pa)**1.154;
REGRESSION COEF = .997; ERRORS: MEAN = 4.30%, MAX = 9.07%.

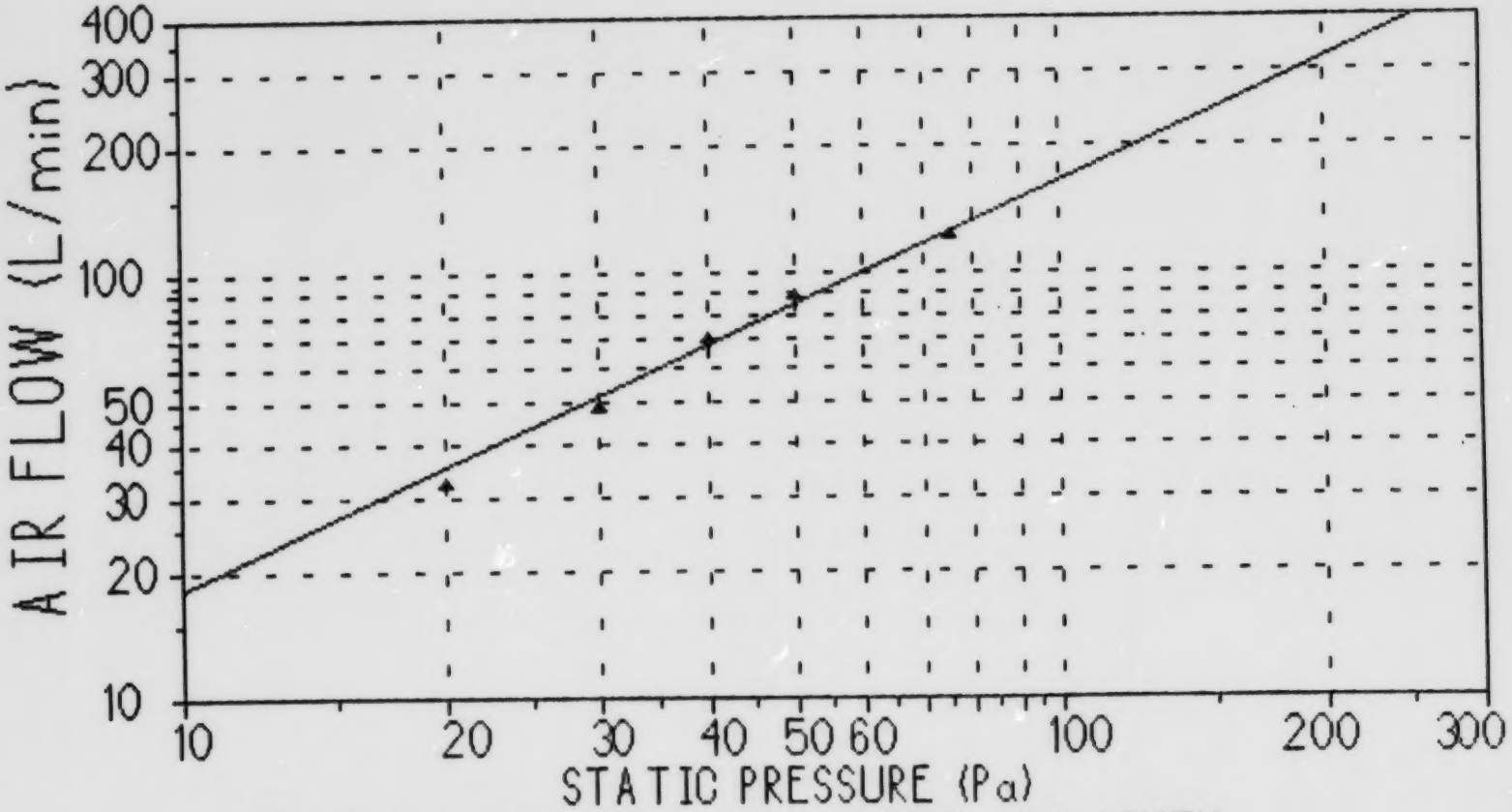
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #3 SOUTH.

FOR THESE POINTS, Q(L/min) = .7210 * P(Pa)** .8961;
REGRESSION COEF = .994; ERRORS: MEAN = 3.49%, MAX = 7.26%.

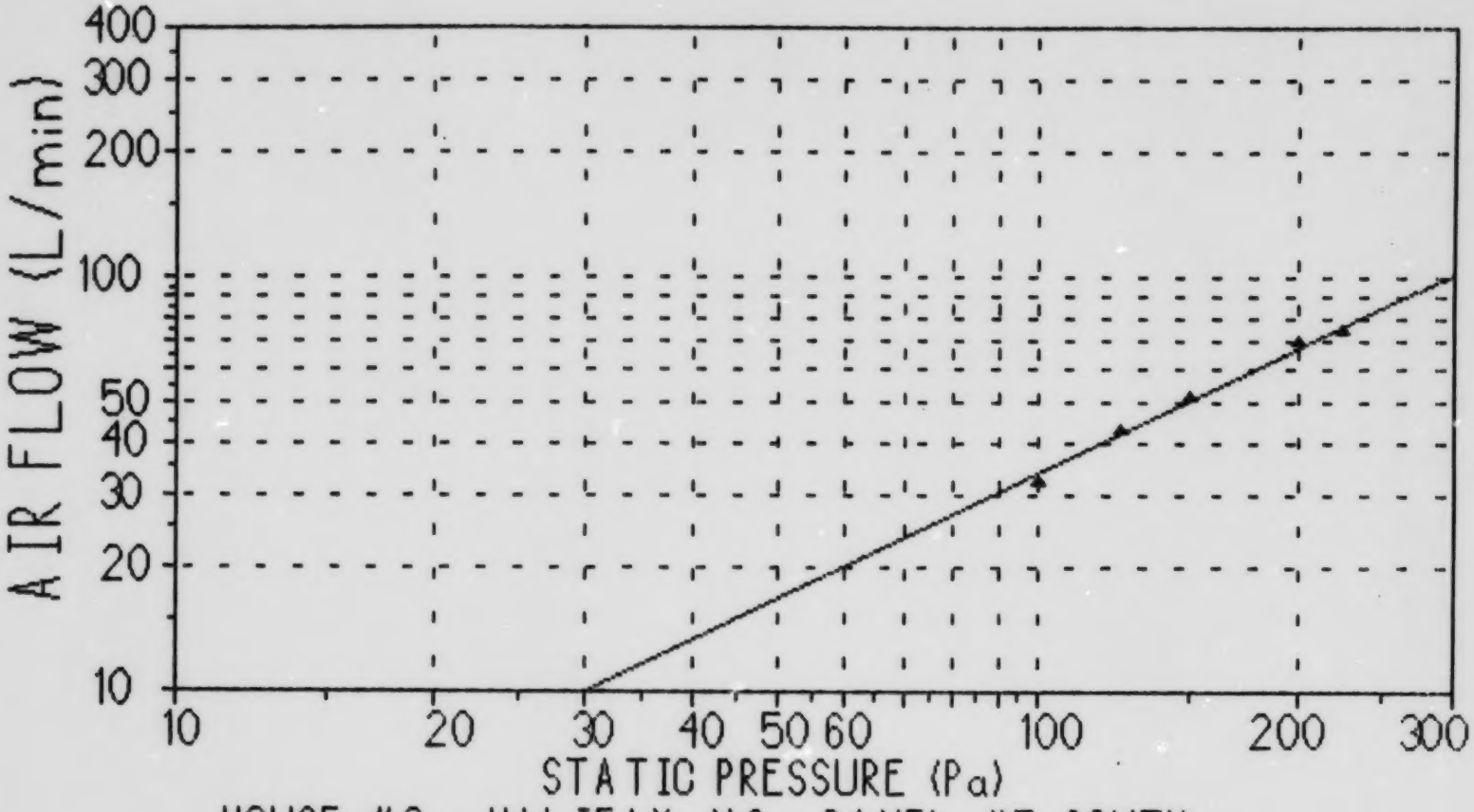
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #4 SOUTH.

FOR THESE POINTS, Q(L/min) = 2.014 * P(Pa)**.9550;
REGRESSION COEF = .993; ERRORS: MEAN = 5.16%, MAX = 9.35%.

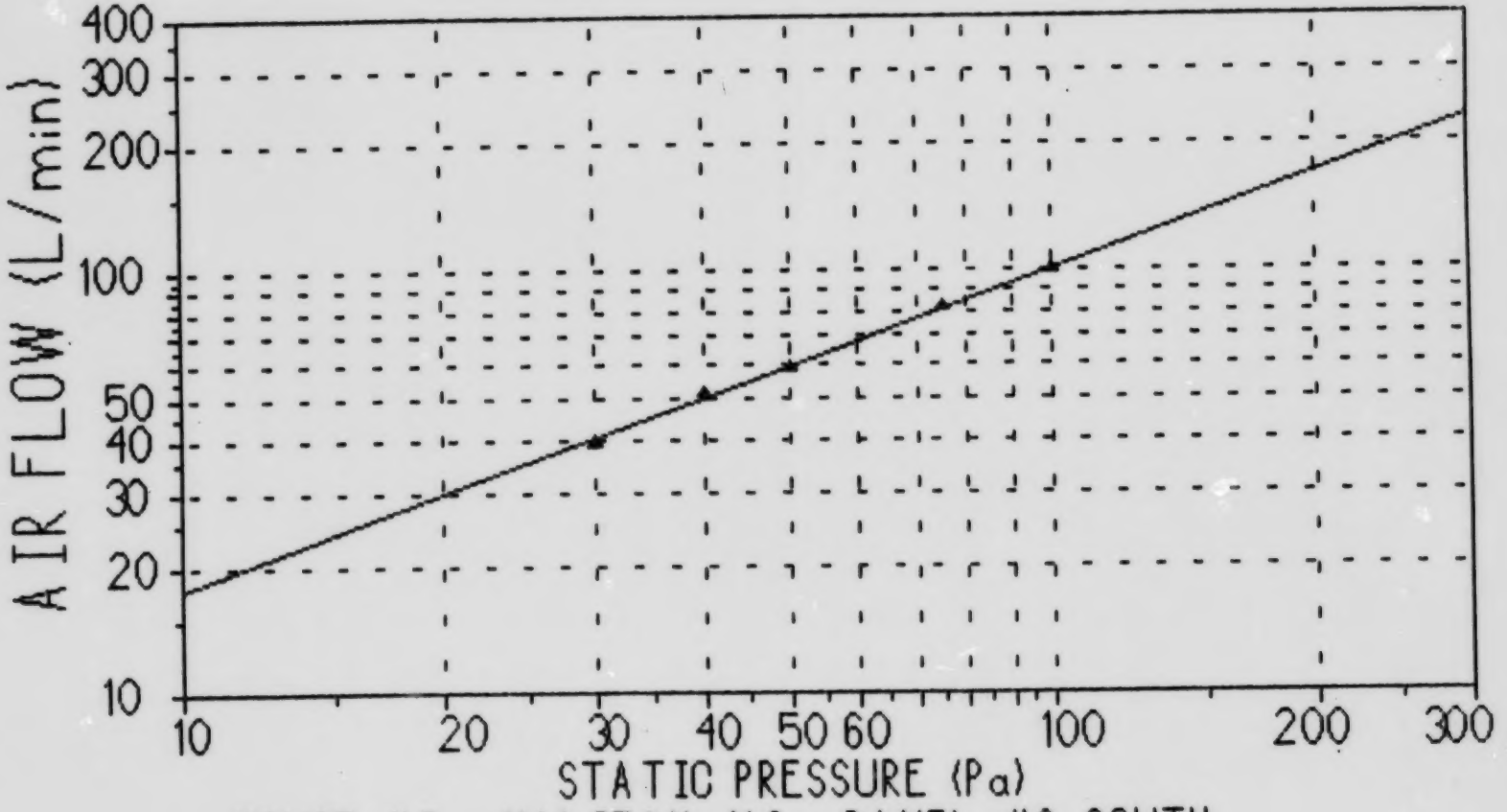
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #5 SOUTH.

FOR THESE POINTS, Q(L/min) = .3269 * P(Pa)**1.007;
REGRESSION COEF = .993; ERRORS: MEAN = 2.68%, MAX = 5.09%.

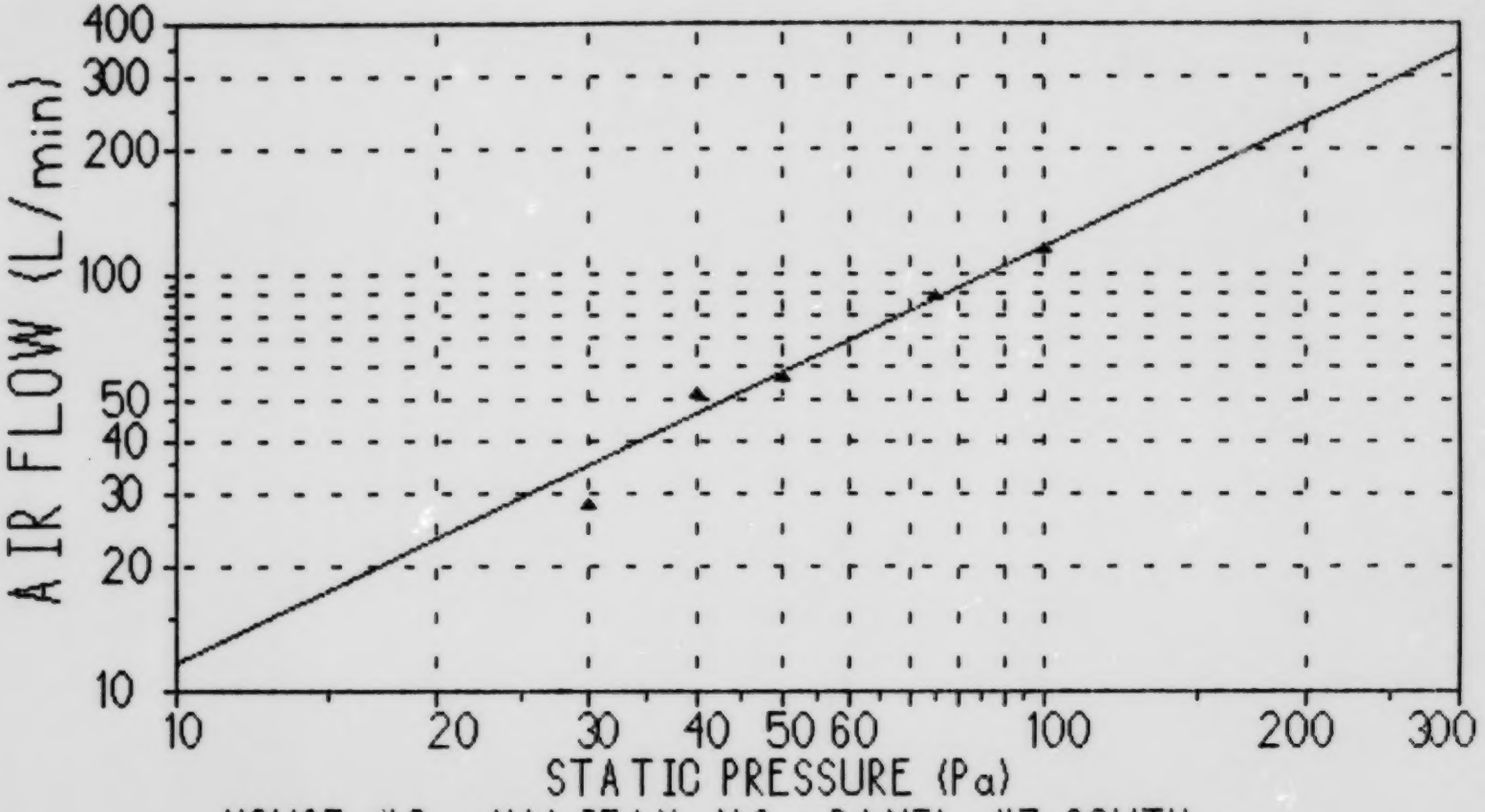
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #6 SOUTH.

FOR THESE POINTS, Q(L/min) = 3.134 * P(Pa)**.7531;
REGRESSION COEF = .999; ERRORS: MEAN = 1.51%, MAX = 2.89%.

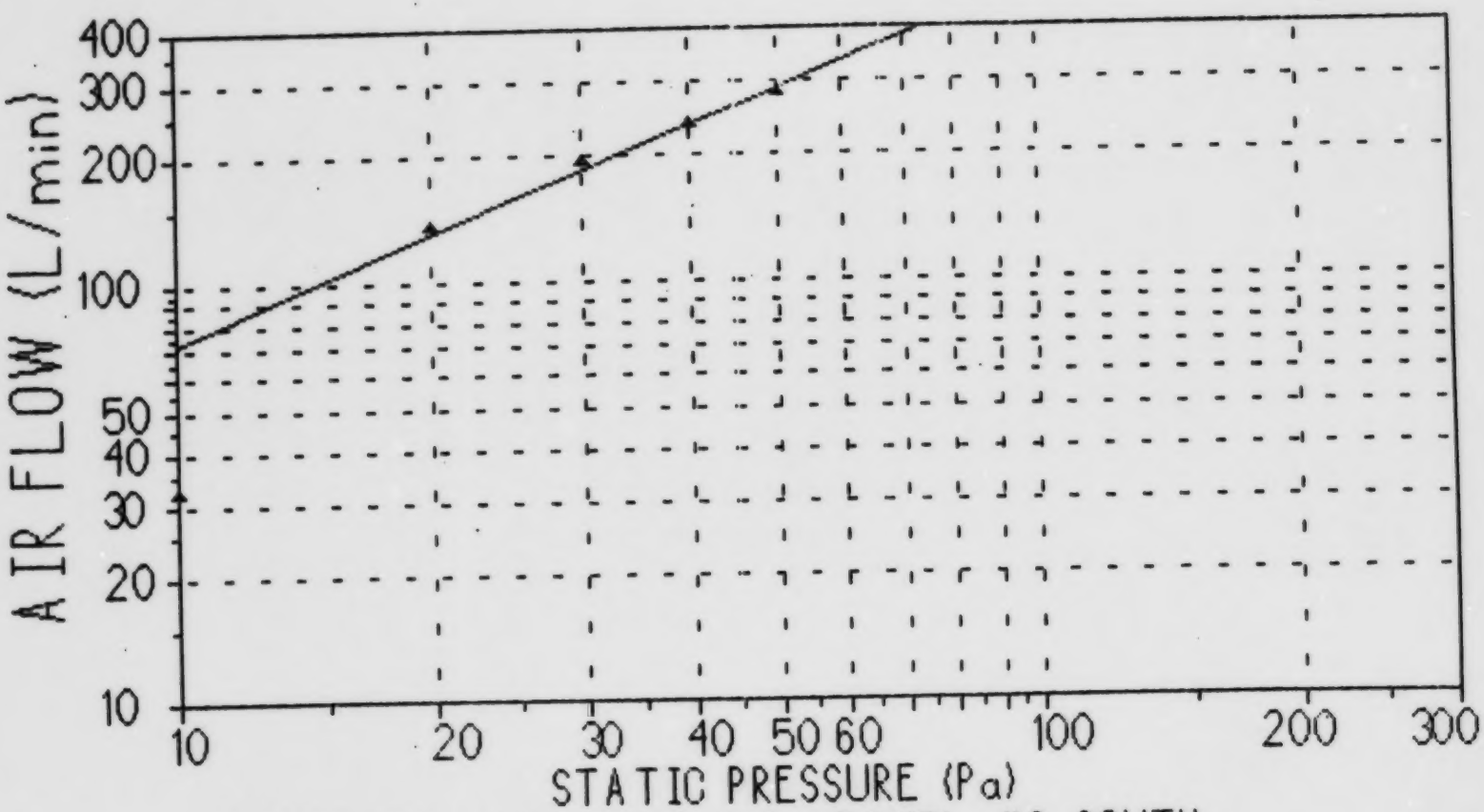
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #7 SOUTH.

FOR THESE POINTS, Q(L/min) = 1.181 * P(Pa)**.9968;
REGRESSION COEF = .989; ERRORS: MEAN = 7.95%, MAX = 25.0%.

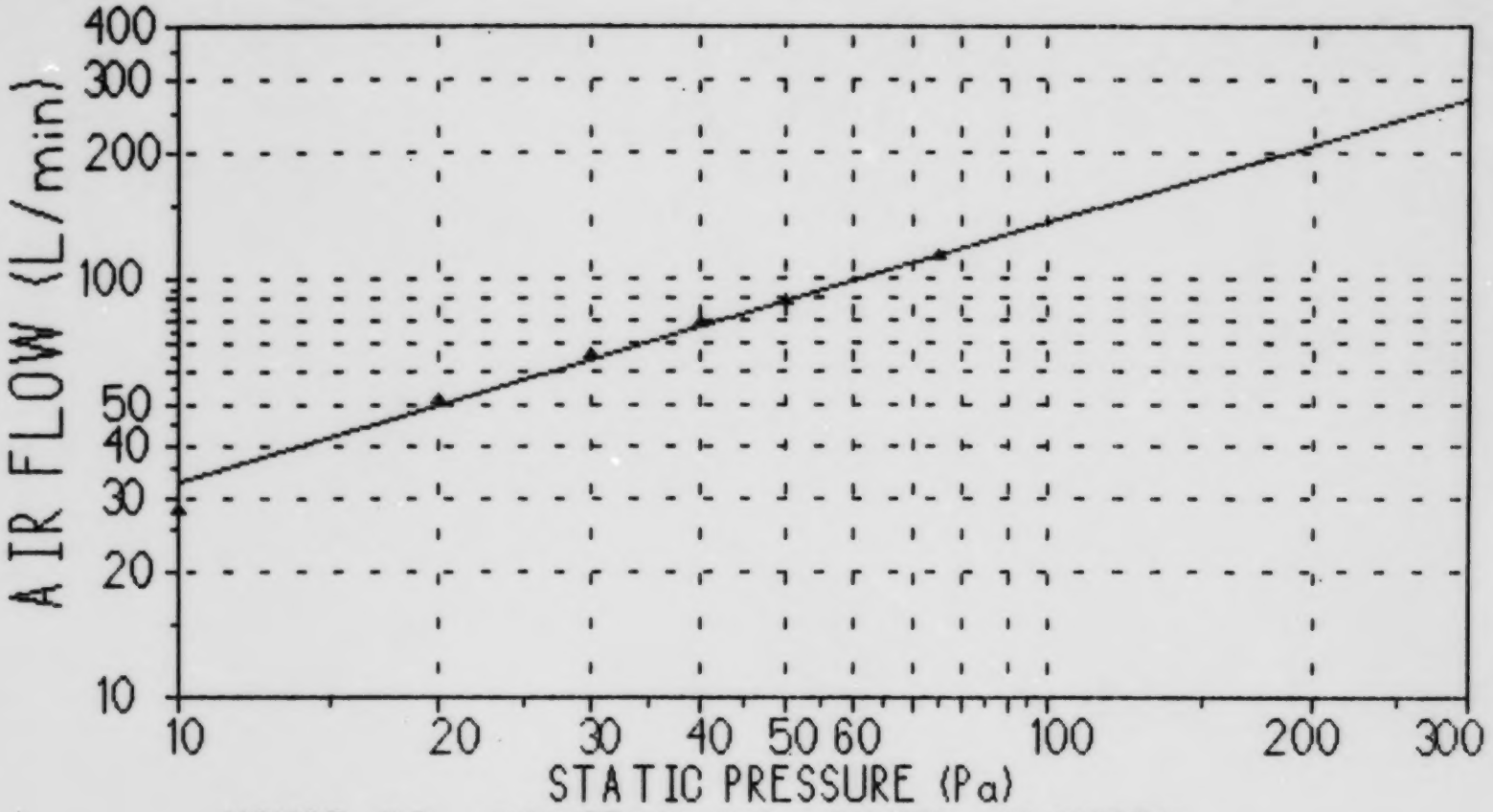
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #8 SOUTH.

FOR THESE POINTS, Q(L/min) = 10.28 * P(Pa)**.8510;
REGRESSION COEF = .969; ERRORS: MEAN = 27.2%, MAX = 126.%.

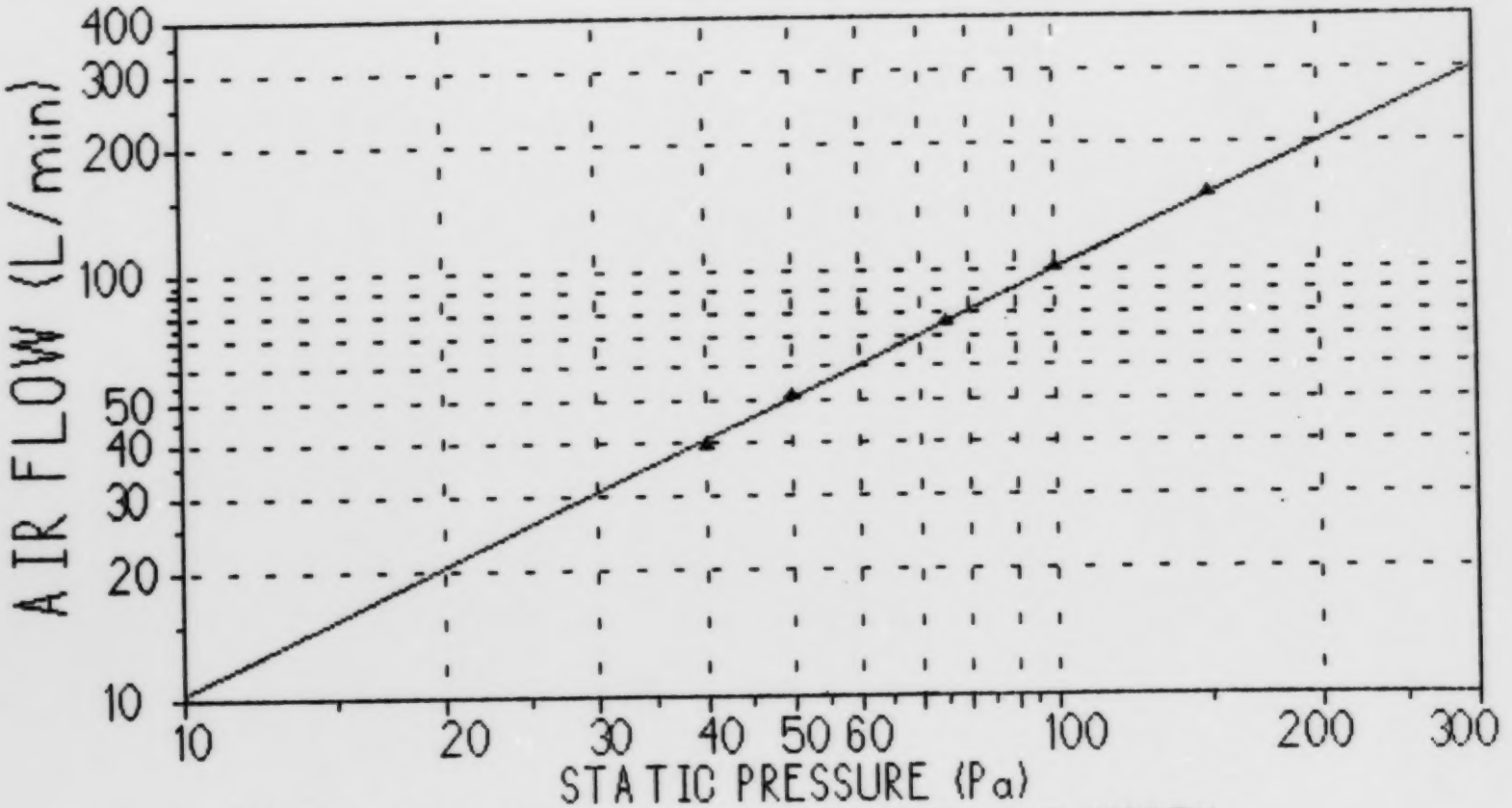
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #1 NORTH.

FOR THESE POINTS, Q(L/min) = 7.815 * P(Pa)** .6209;
REGRESSION COEF = .995; ERRORS: MEAN = 3.98%, MAX = 16.3%.

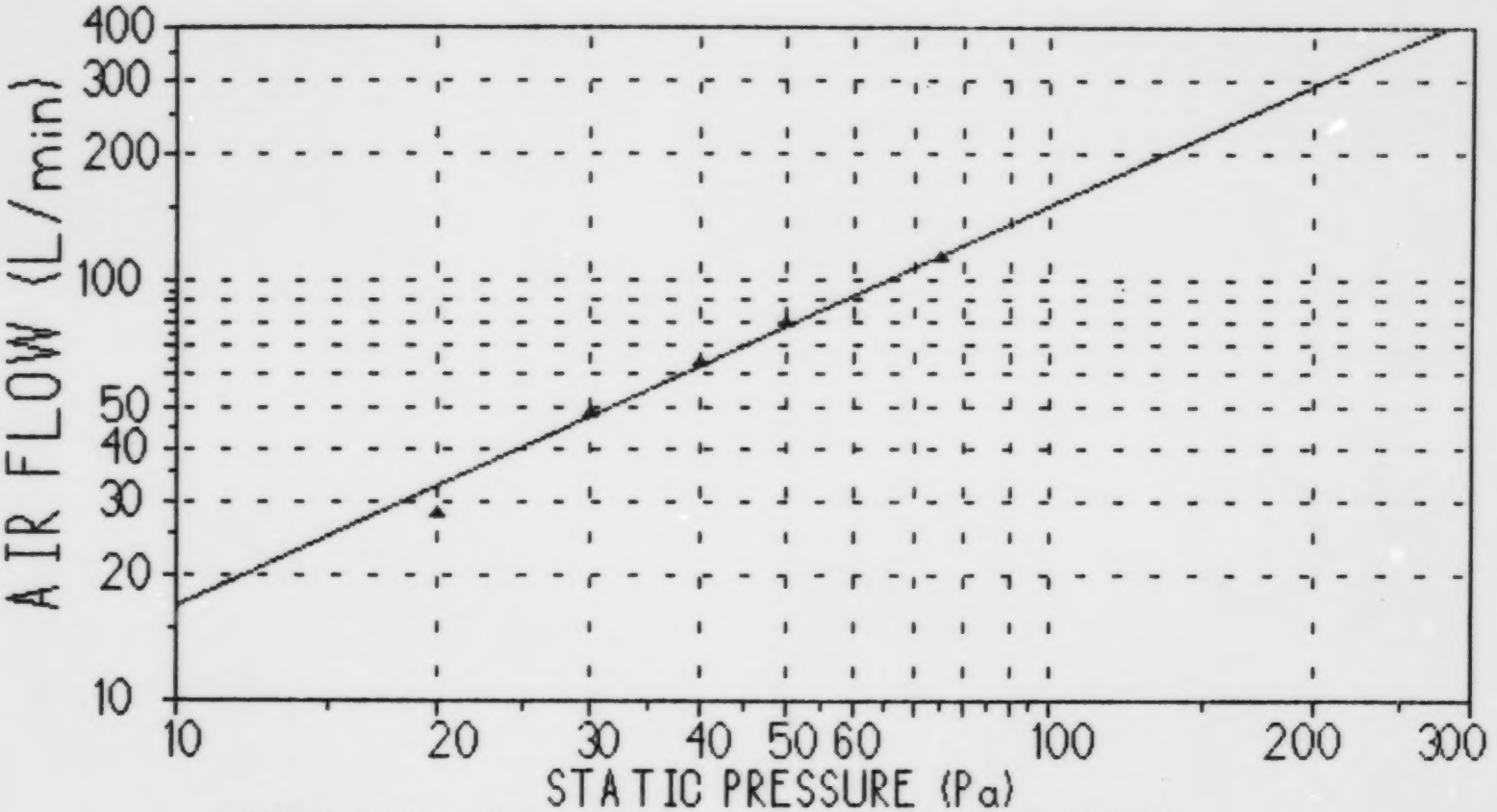
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #2 NORTH.

FOR THESE POINTS, Q(L/min) = 1.050 * P(Pa)**.9917;
REGRESSION COEF = .999; ERRORS: MEAN = 1.08%, MAX = 3.27%.

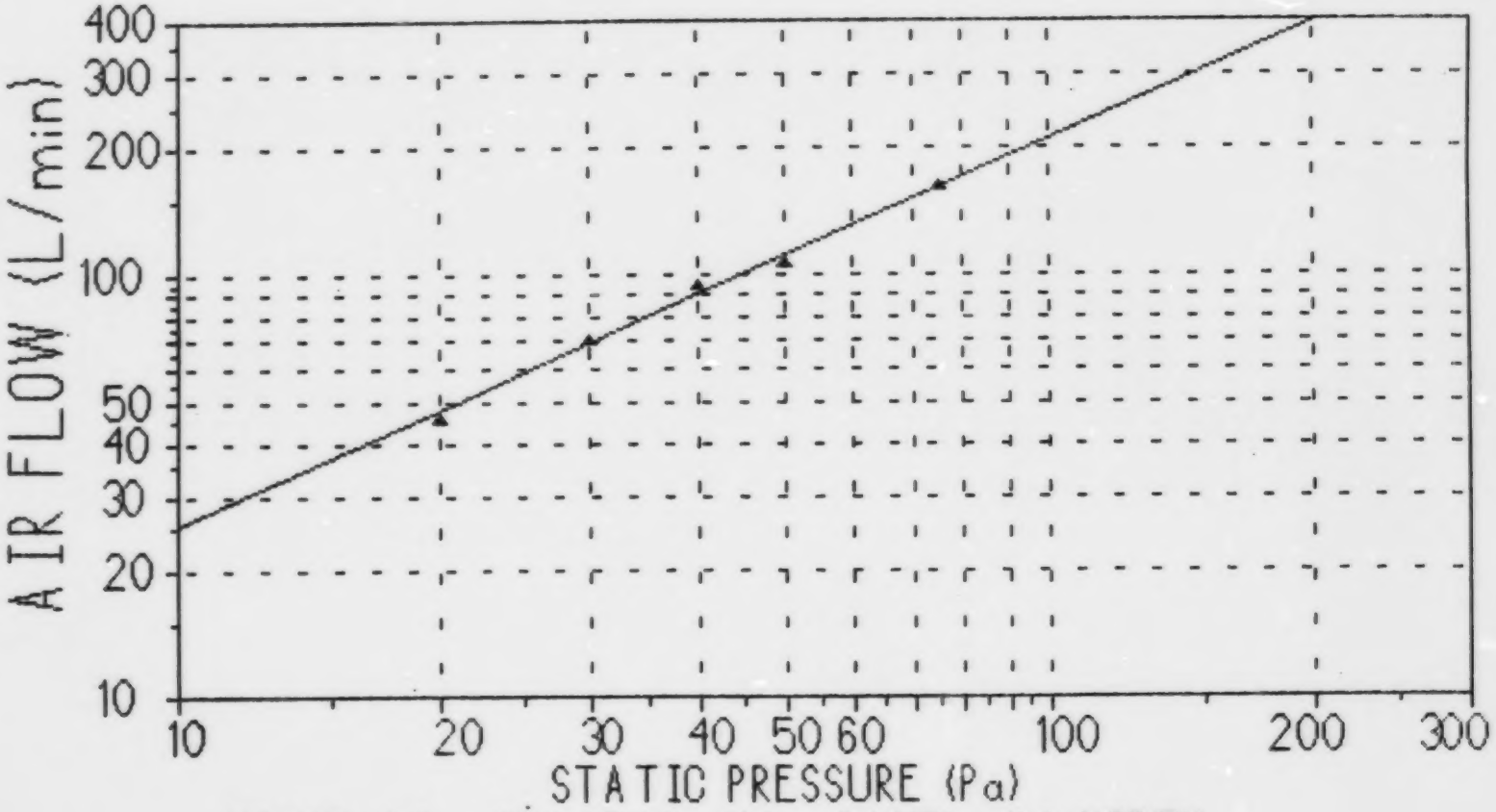
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #3 NORTH.

FOR THESE POINTS, Q(L/min) = 1.888 * P(Pa)**.9503;
REGRESSION COEF = .995; ERRORS: MEAN = 4.72%, MAX = 16.0%.

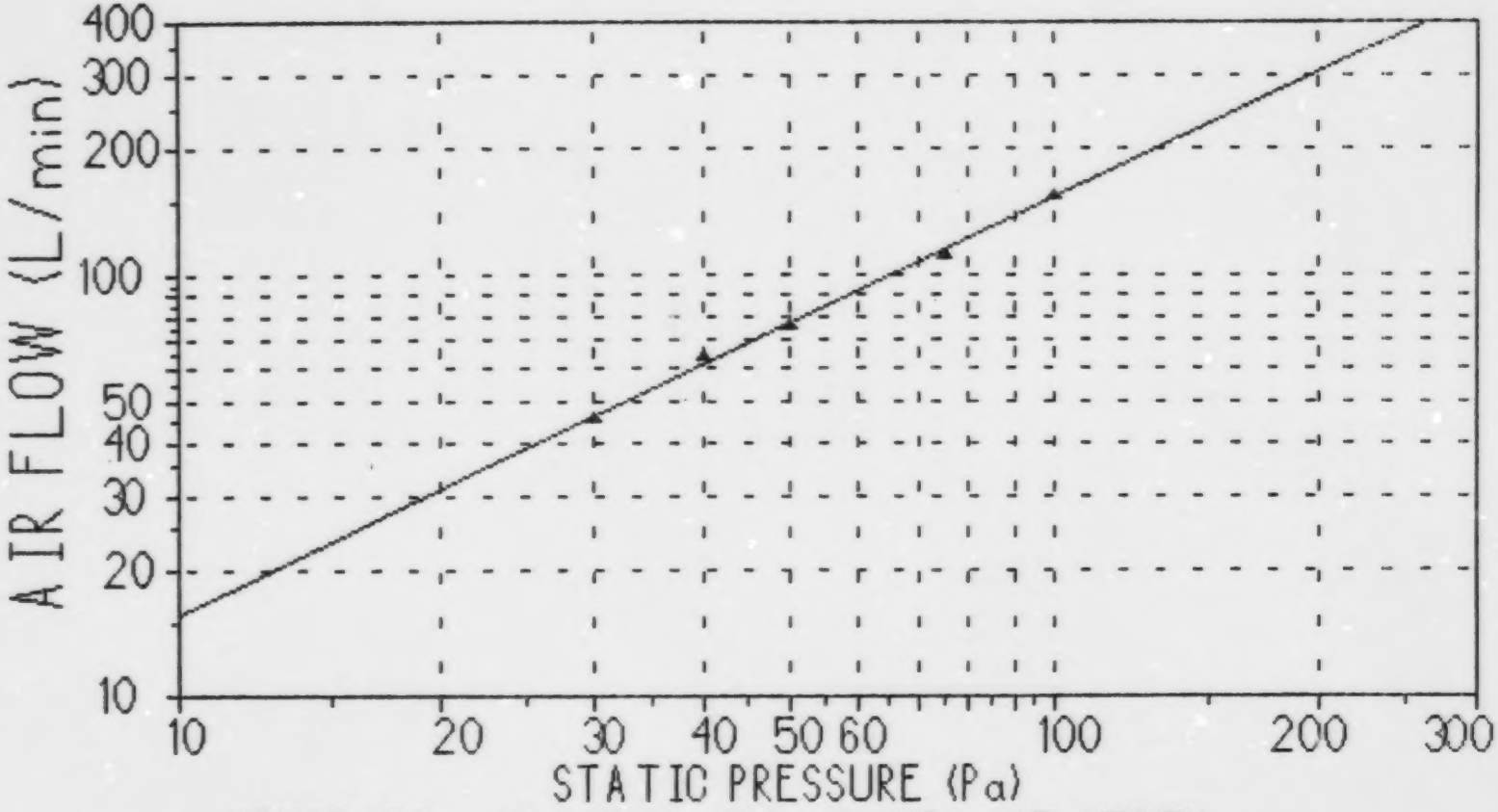
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #4 NORTH.

FOR THESE POINTS, Q(L/min) = 3.093 * P(Pa)** .9146;
REGRESSION COEF = .997; ERRORS: MEAN = 2.61%, MAX = 4.52%.

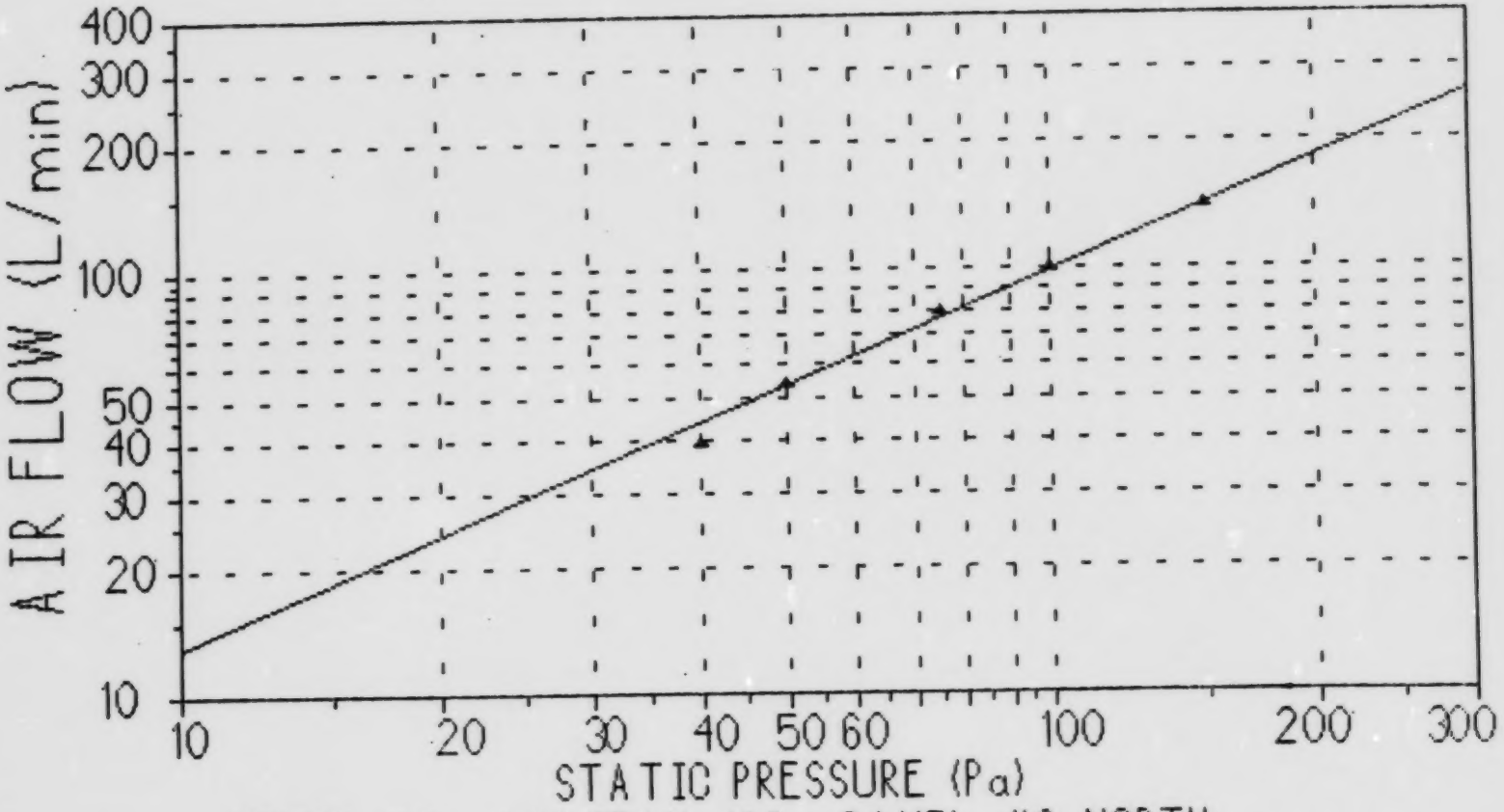
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #5 NORTH.

FOR THESE POINTS, Q(L/min) = 1.589 * P(Pa)**.9909;
REGRESSION COEF = .998; ERRORS: MEAN = 1.79%, MAX = 3.72%.

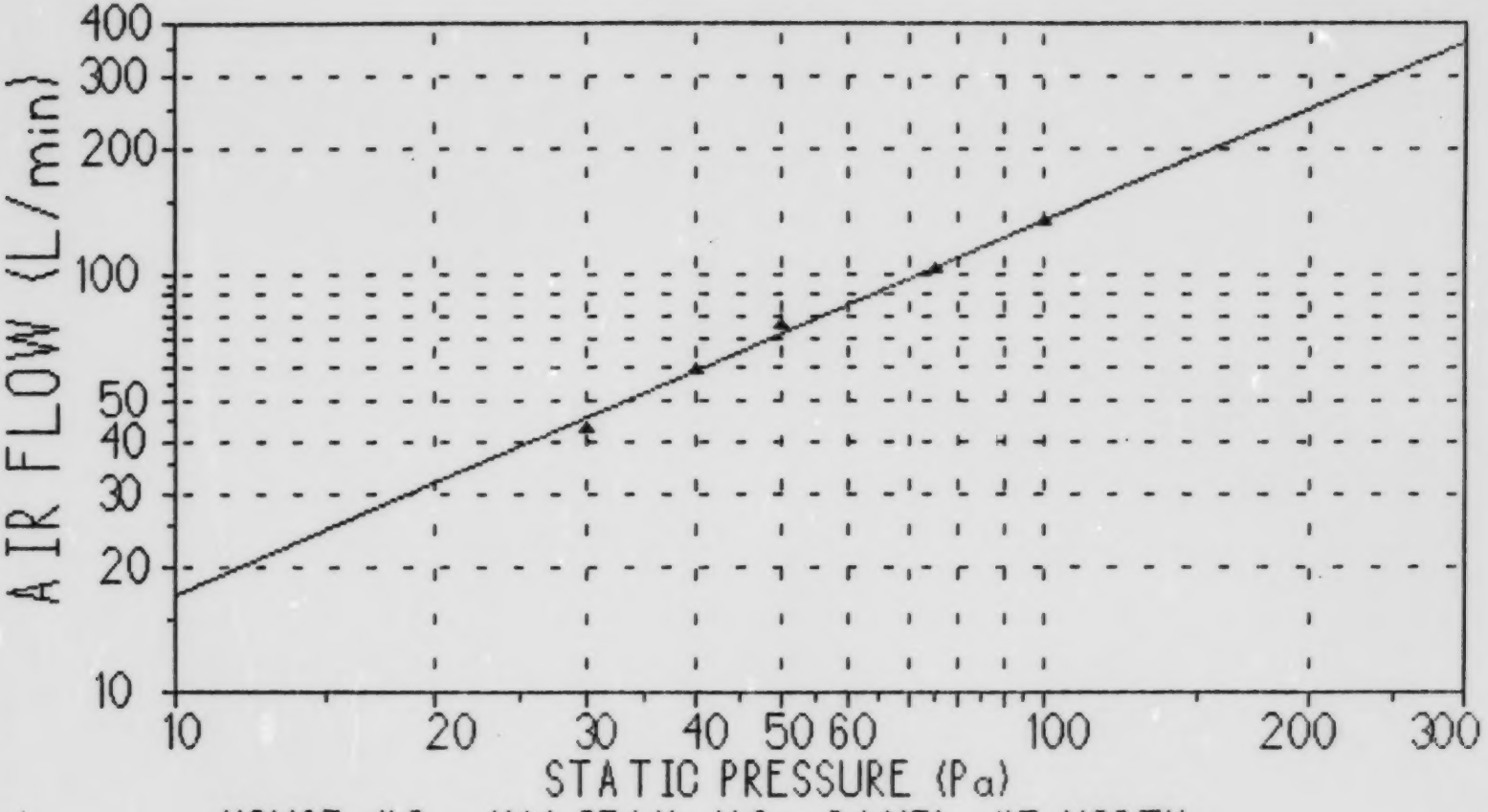
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #6 NORTH.

FOR THESE POINTS, Q(L/min) = 1.712 * P(Pa)** .8813;
REGRESSION COEF = .996; ERRORS: MEAN = 3.67%, MAX = 12.0%.

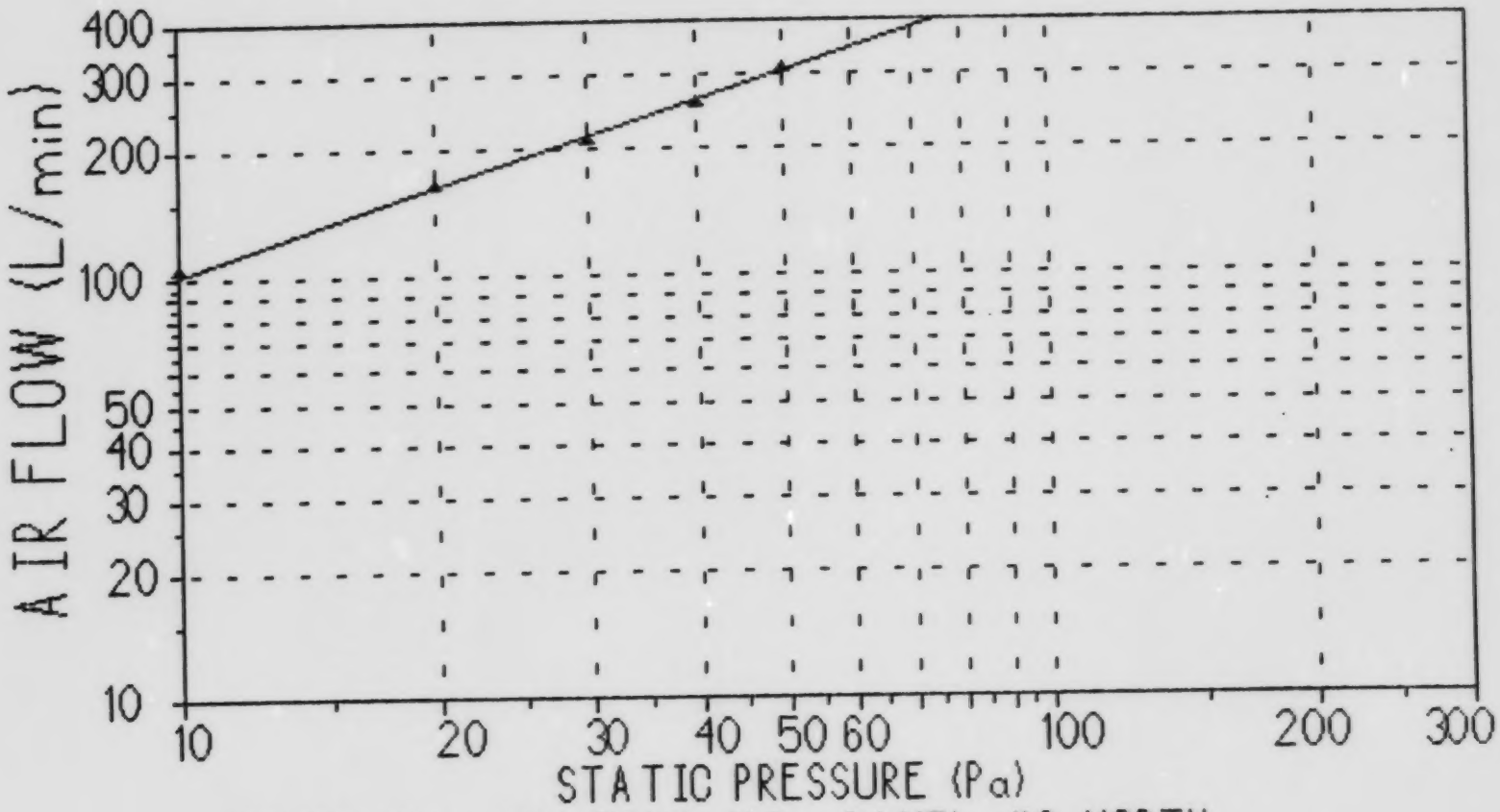
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #7 NORTH.

FOR THESE POINTS, Q(L/min) = 2.175 * P(Pa)**.8964;
REGRESSION COEF = .996; ERRORS: MEAN = 2.81%, MAX = 7.34%.

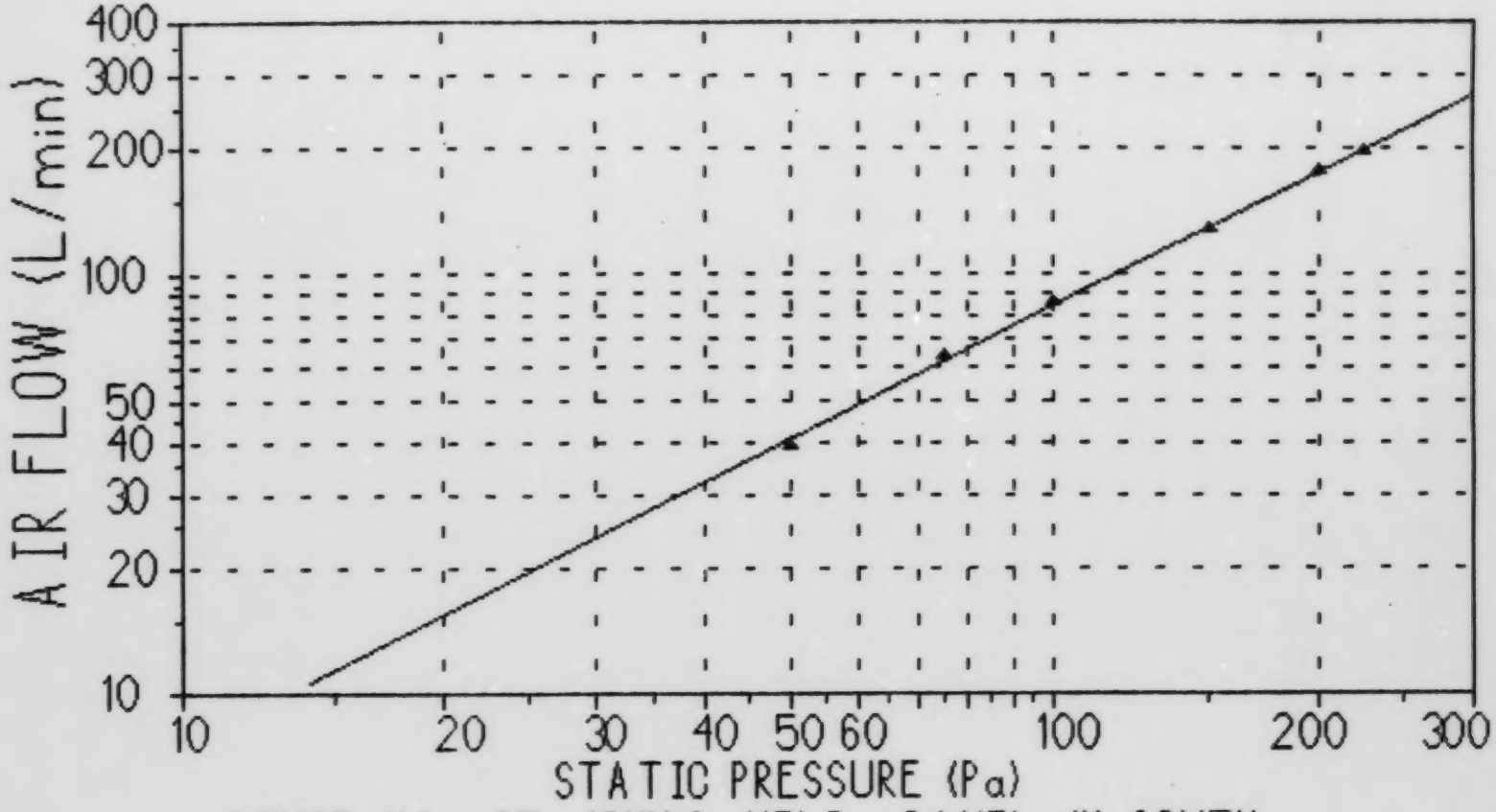
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #2 - HALIFAX N.S - PANEL #8 NORTH.

FOR THESE POINTS, Q(L/min) = 21.40 * P(Pa)** .6769;
REGRESSION COEF = .998; ERRORS: MEAN = 1.49%, MAX = 2.55%.

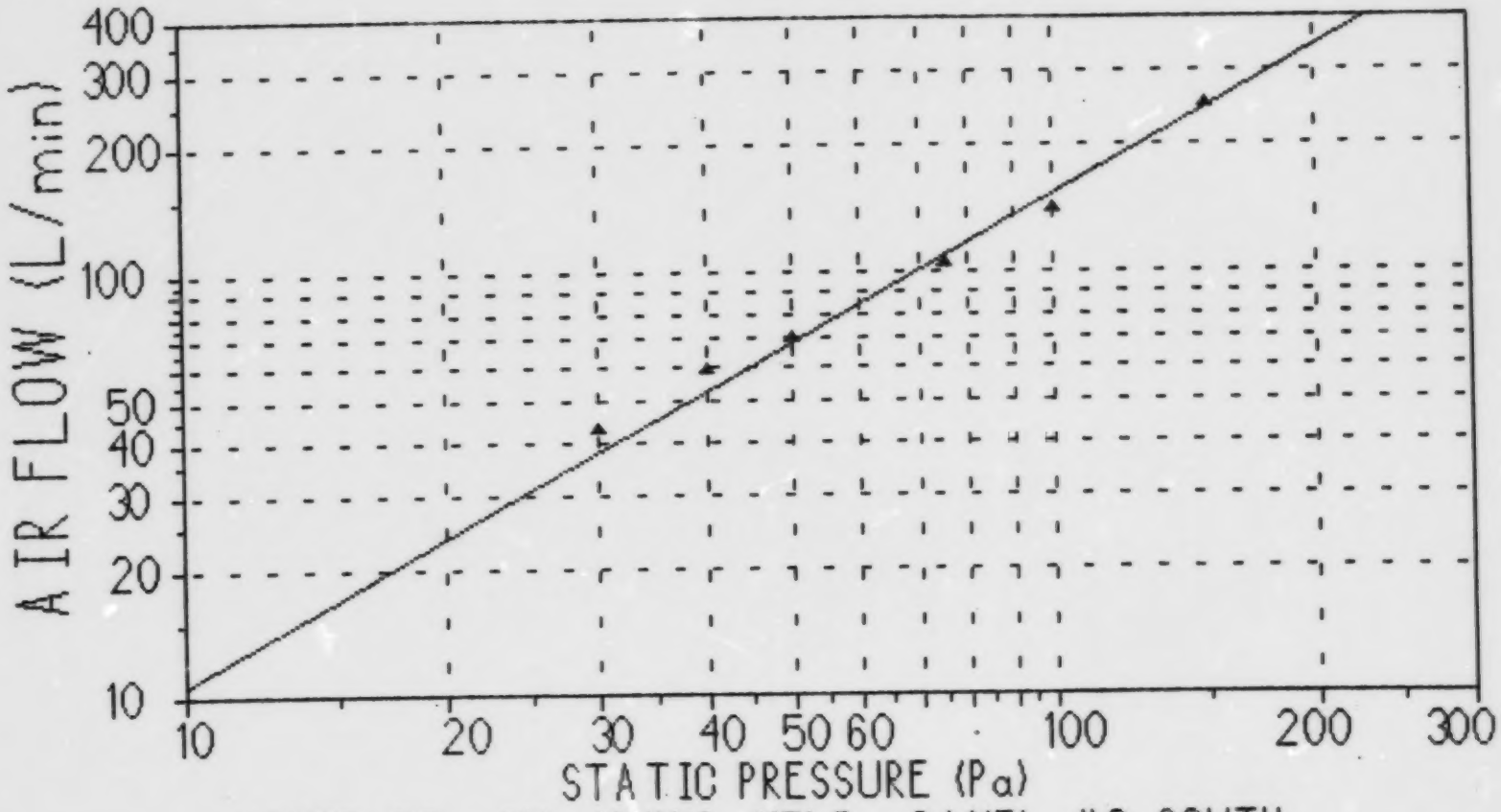
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #1 SOUTH.

FOR THESE POINTS, Q(L/min) = .6605 * P(Pa)**1.053;
REGRESSION COEF = .999; ERRORS: MEAN = 1.47%, MAX = 3.33%.

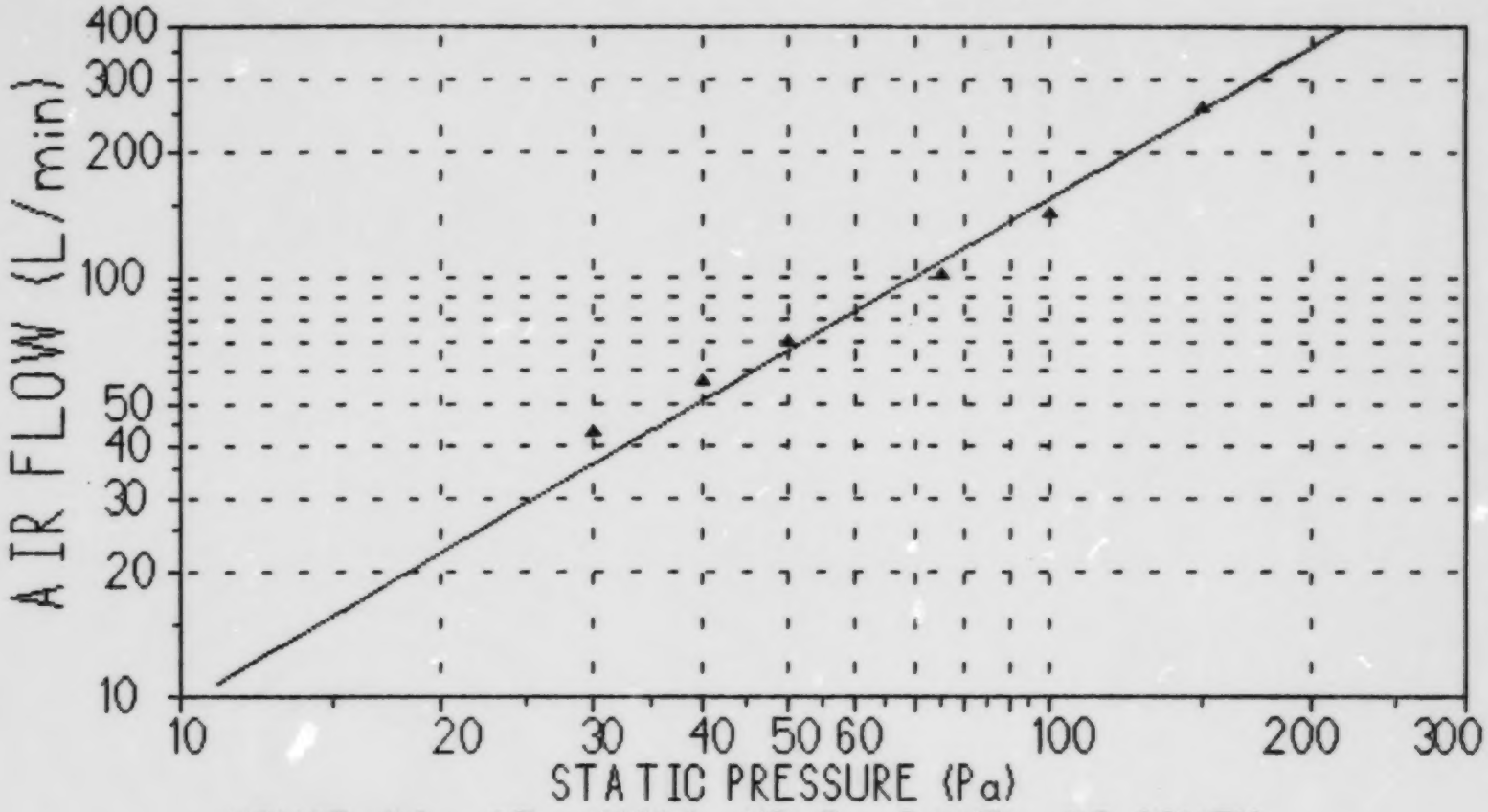
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #2 SOUTH.

FOR THESE POINTS, Q(L/min) = .7514 * P(Pa)**1.154;
REGRESSION COEF = .994; ERRORS: MEAN = 6.45%, MAX = 10.9%.

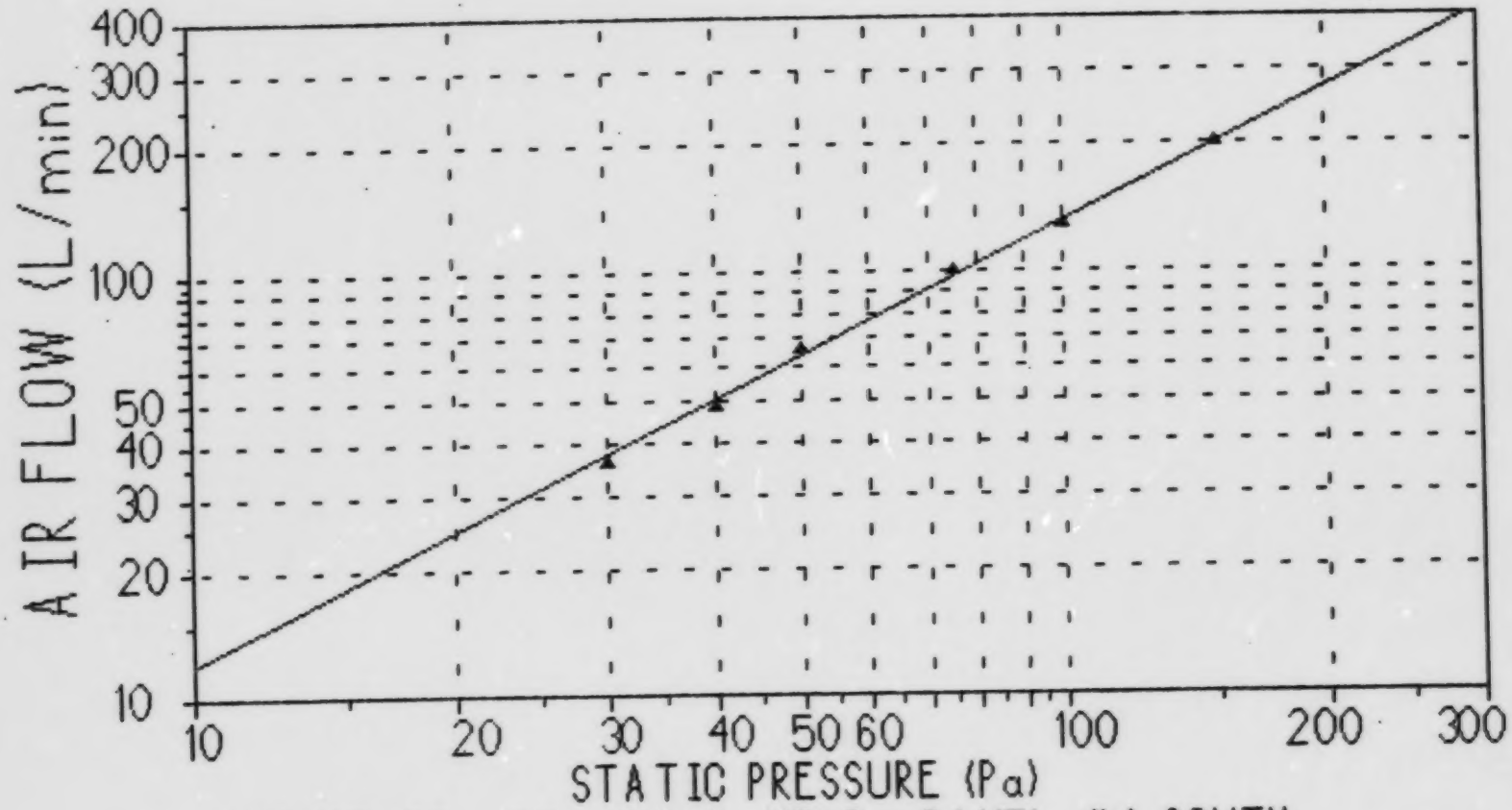
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #3 SOUTH.

FOR THESE POINTS, Q(L/min) = .6005 * P(Pa)**1.205;
REGRESSION COEF = .993; ERRORS: MEAN = 8.00%, MAX = 15.2%.

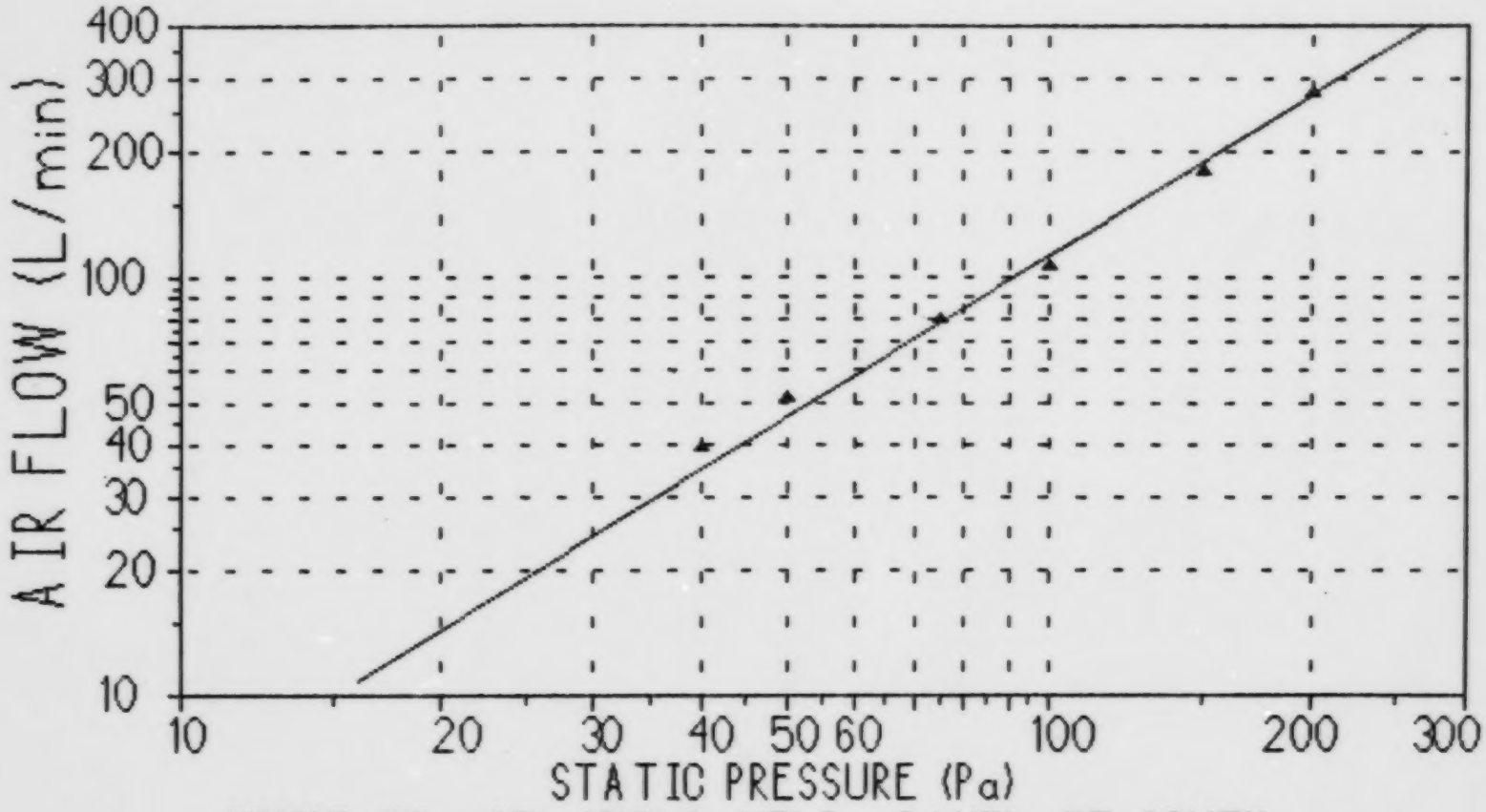
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #4 SOUTH.

FOR THESE POINTS, Q(L/min) = 1.105 * P(Pa)**1.037;
REGRESSION COEF = .999; ERRORS: MEAN = 2.72%, MAX = 4.66%.

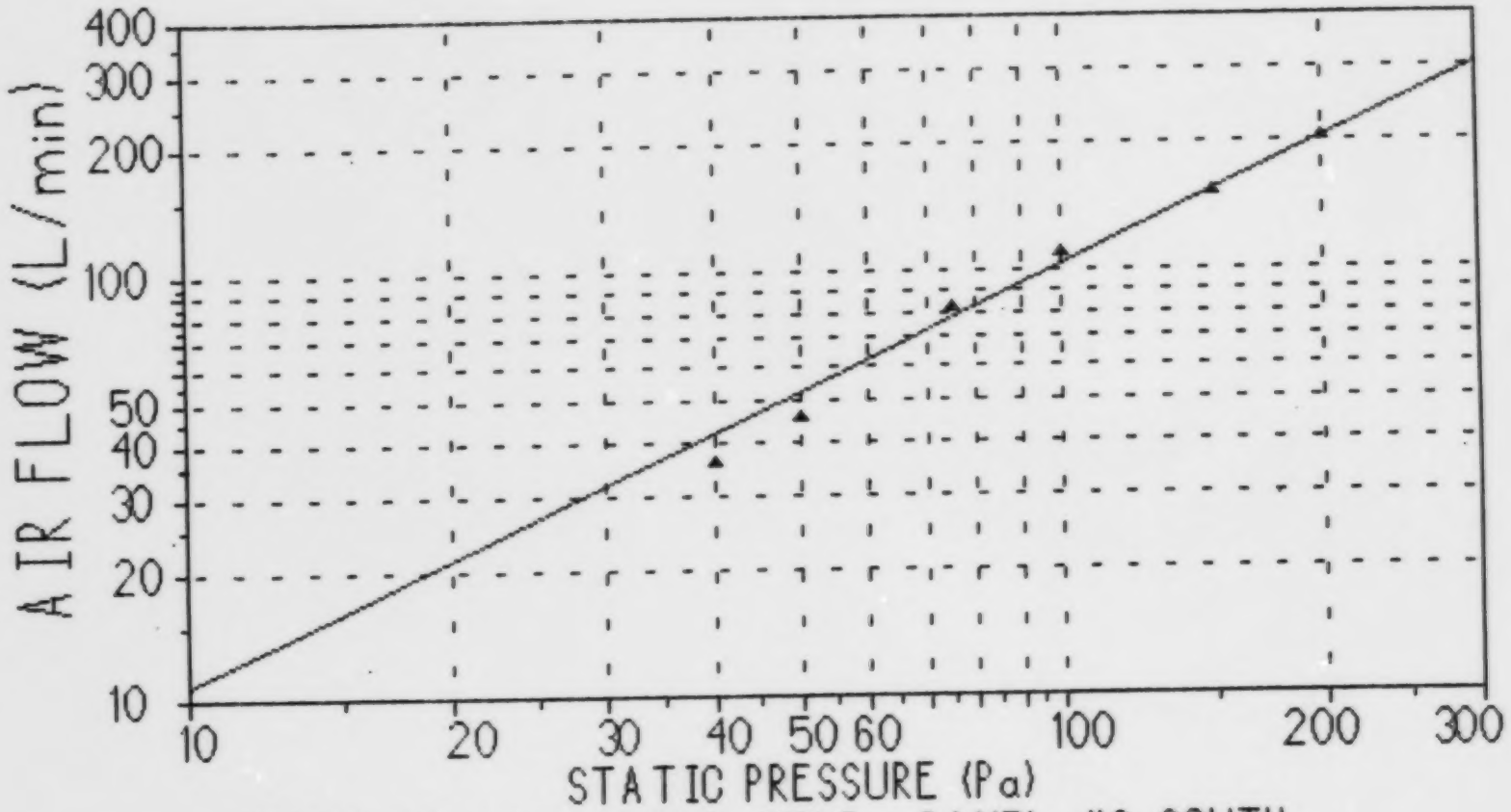
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #5 SOUTH.

FOR THESE POINTS, Q(L/min) = .3134 * P(Pa)**1.277;
REGRESSION COEF = .996; ERRORS: MEAN = 6.02%, MAX = 11.5%.

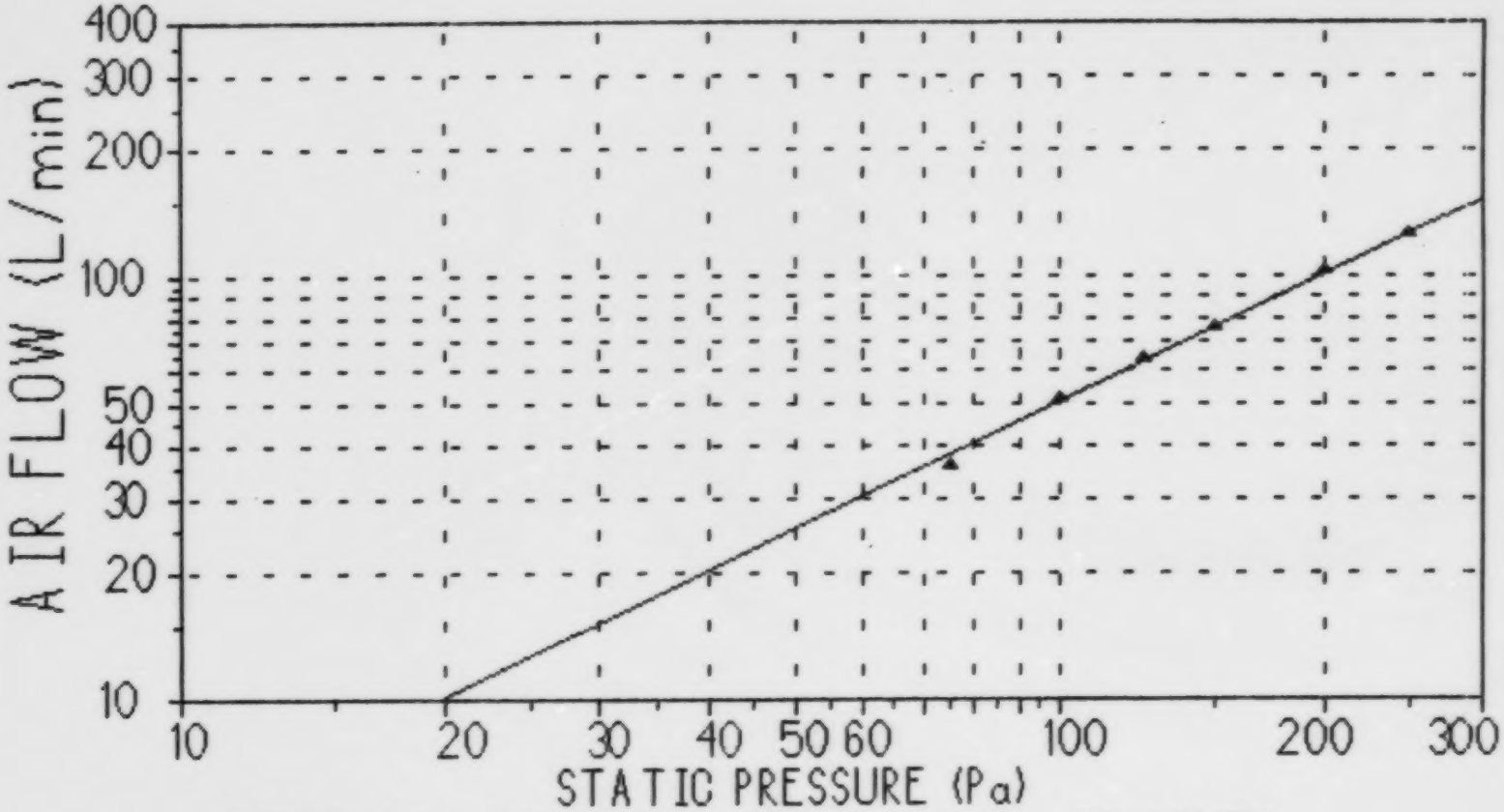
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #6 SOUTH.

FOR THESE POINTS, Q(L/min) = 1.133 * P(Pa)**.9804;
REGRESSION COEF = .994; ERRORS: MEAN = 7.38%, MAX = 17.2%.

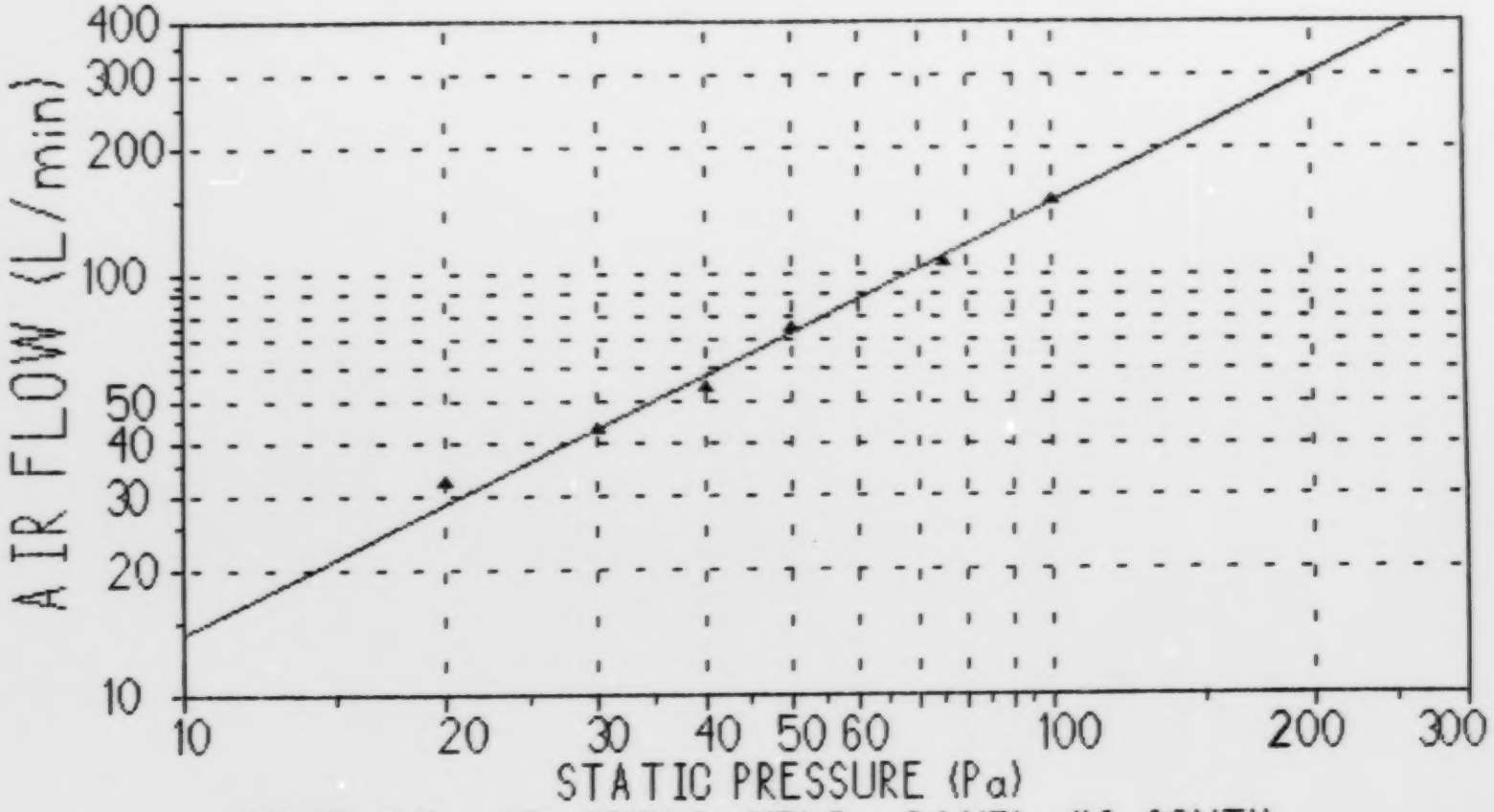
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #7 SOUTH.

FOR THESE POINTS, Q(L/min) = .5149 * P(Pa)** .9971;
REGRESSION COEF = .998; ERRORS: MEAN = 1.77%, MAX = 6.03%.

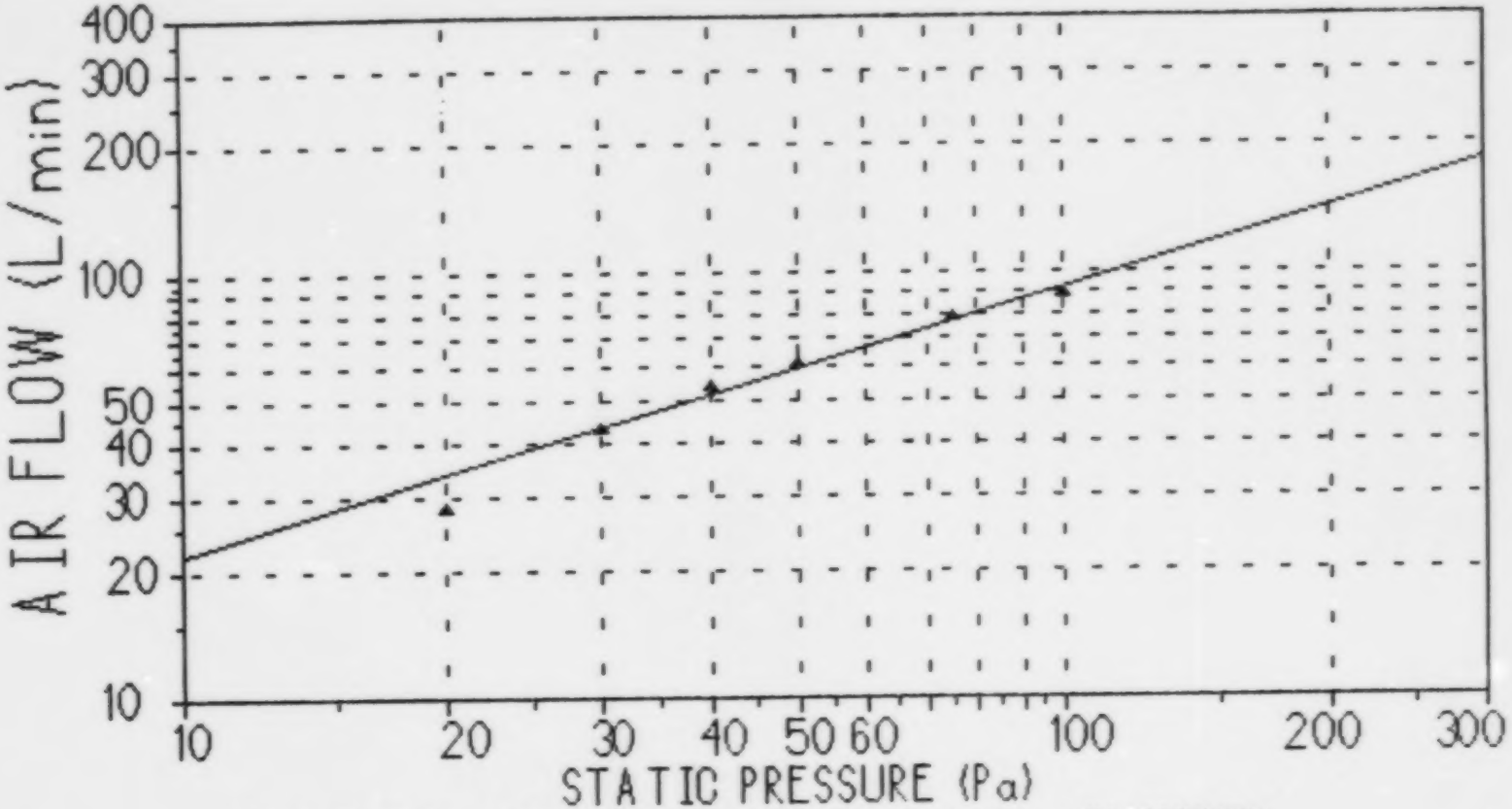
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #8 SOUTH.

FOR THESE POINTS, Q(L/min) = 1.321 * P(Pa)**1.024;
REGRESSION COEF = .997; ERRORS: MEAN = 4.26%, MAX = 11.6%.

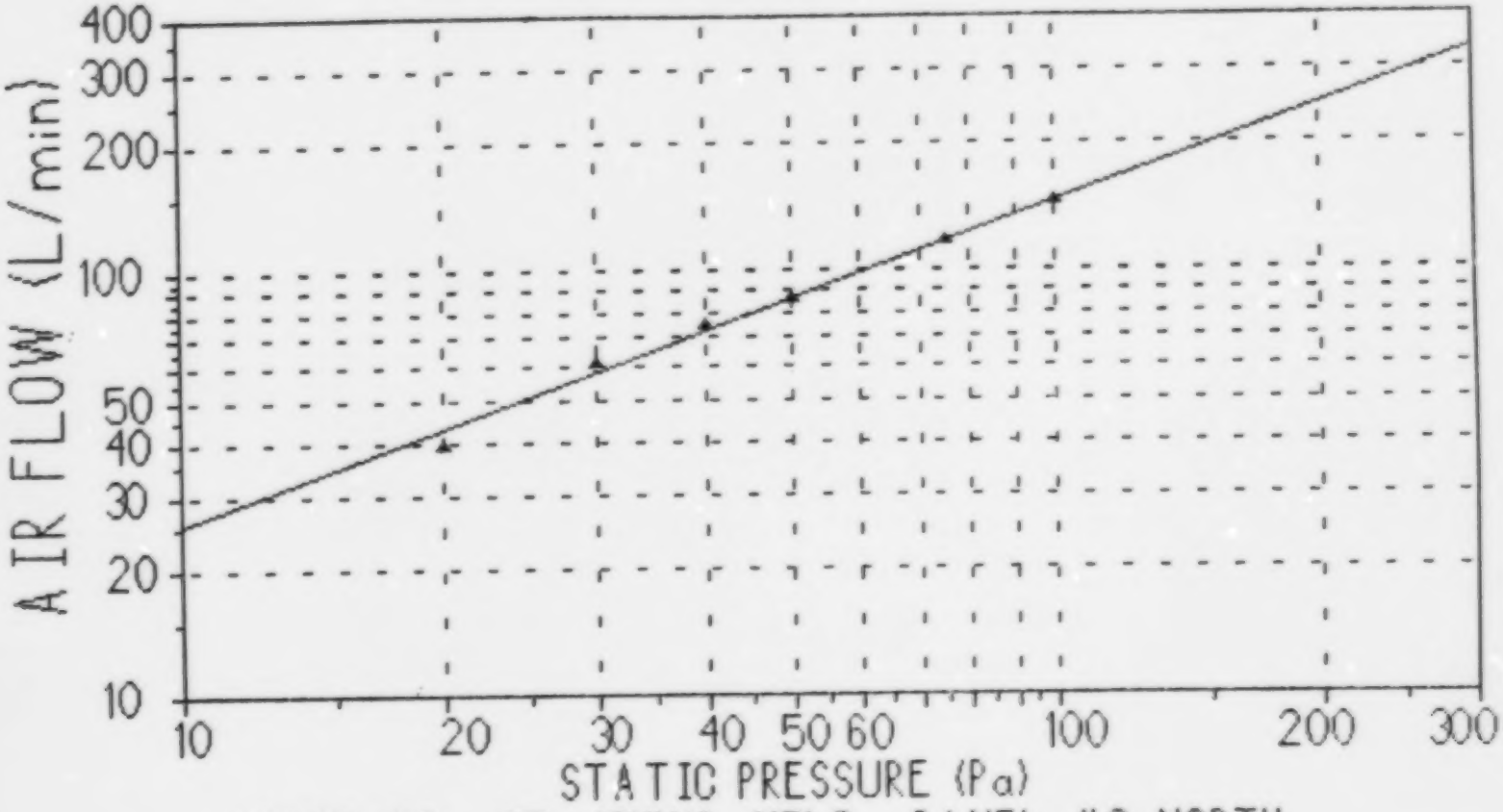
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #1 NORTH.

FOR THESE POINTS, Q(L/min) = 5.190 * P(Pa)** .6233;
REGRESSION COEF = .987; ERRORS: MEAN = 5.66%, MAX = 19.7%.

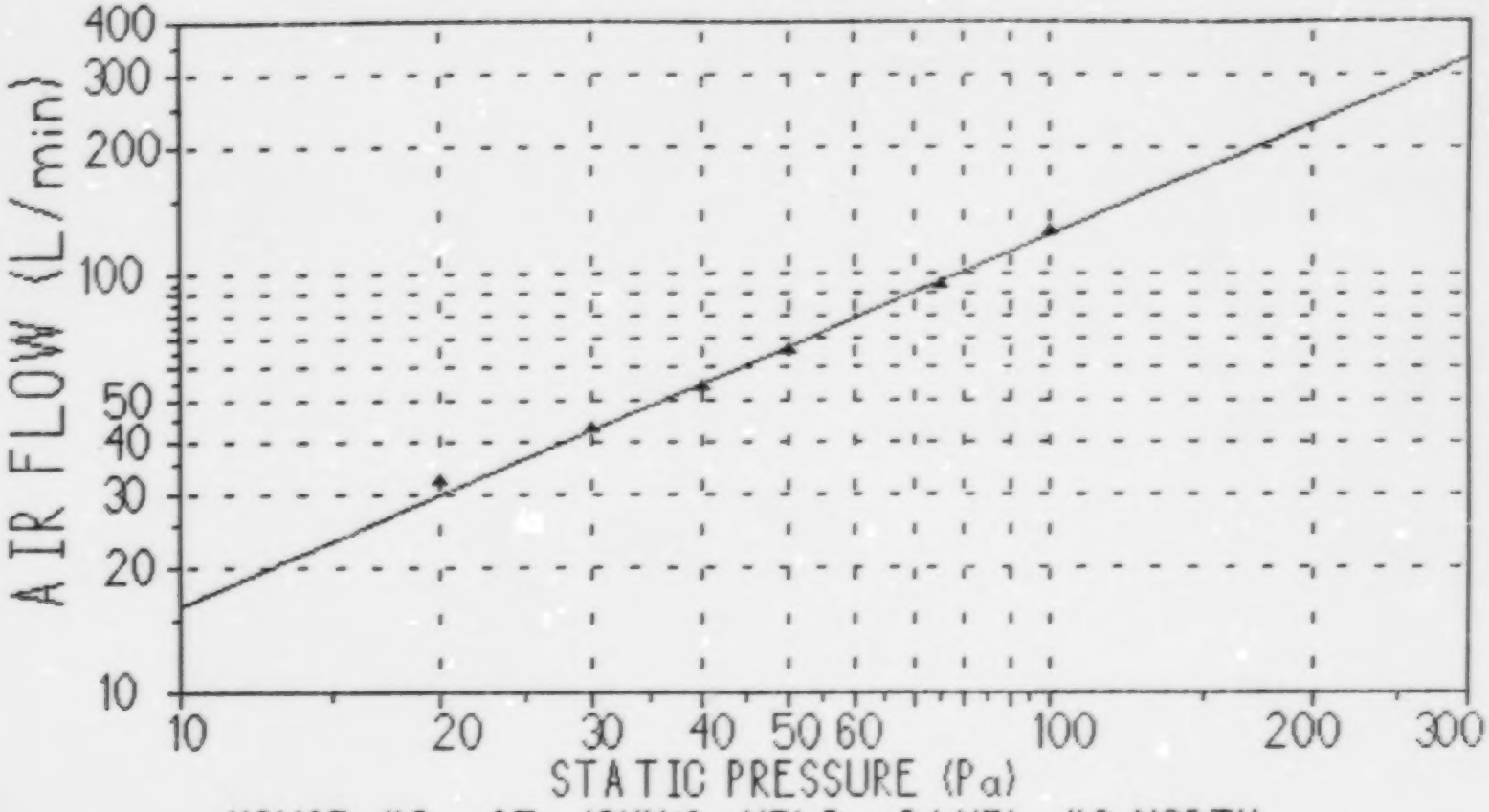
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #2 NORTH.

FOR THESE POINTS, Q(L/min) = 4.523 * P(Pa)** .7540;
REGRESSION COEF = .997; FRRORS: MEAN = 2.94%, MAX = 9.67%.

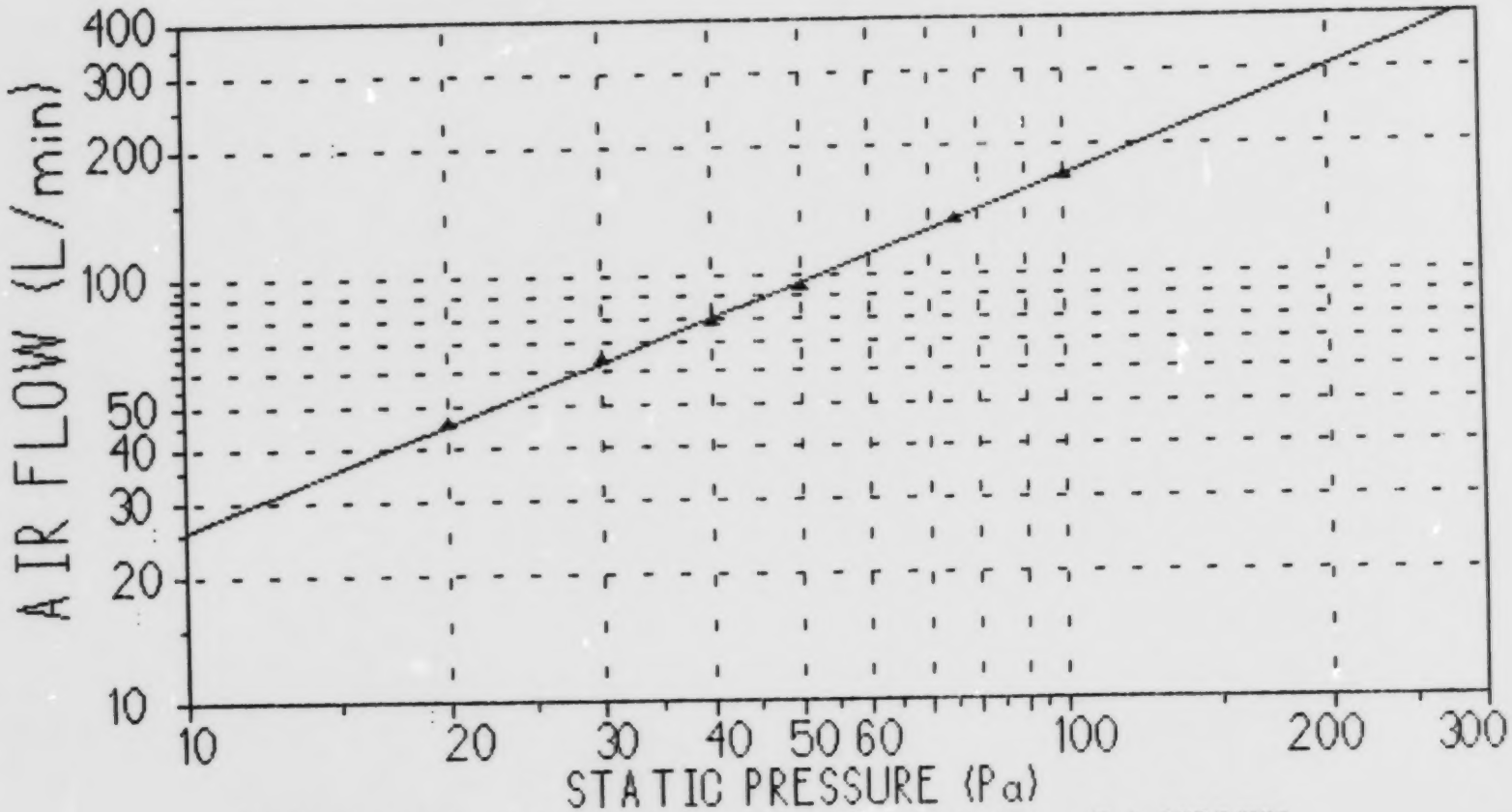
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #3 NORTH.

FOR THESE POINTS, Q(L/min) = 2.094 * P(Pa)**.8859;
REGRESSION COEF = .998; ERRORS: MEAN = 2.40%, MAX = 7.59%.

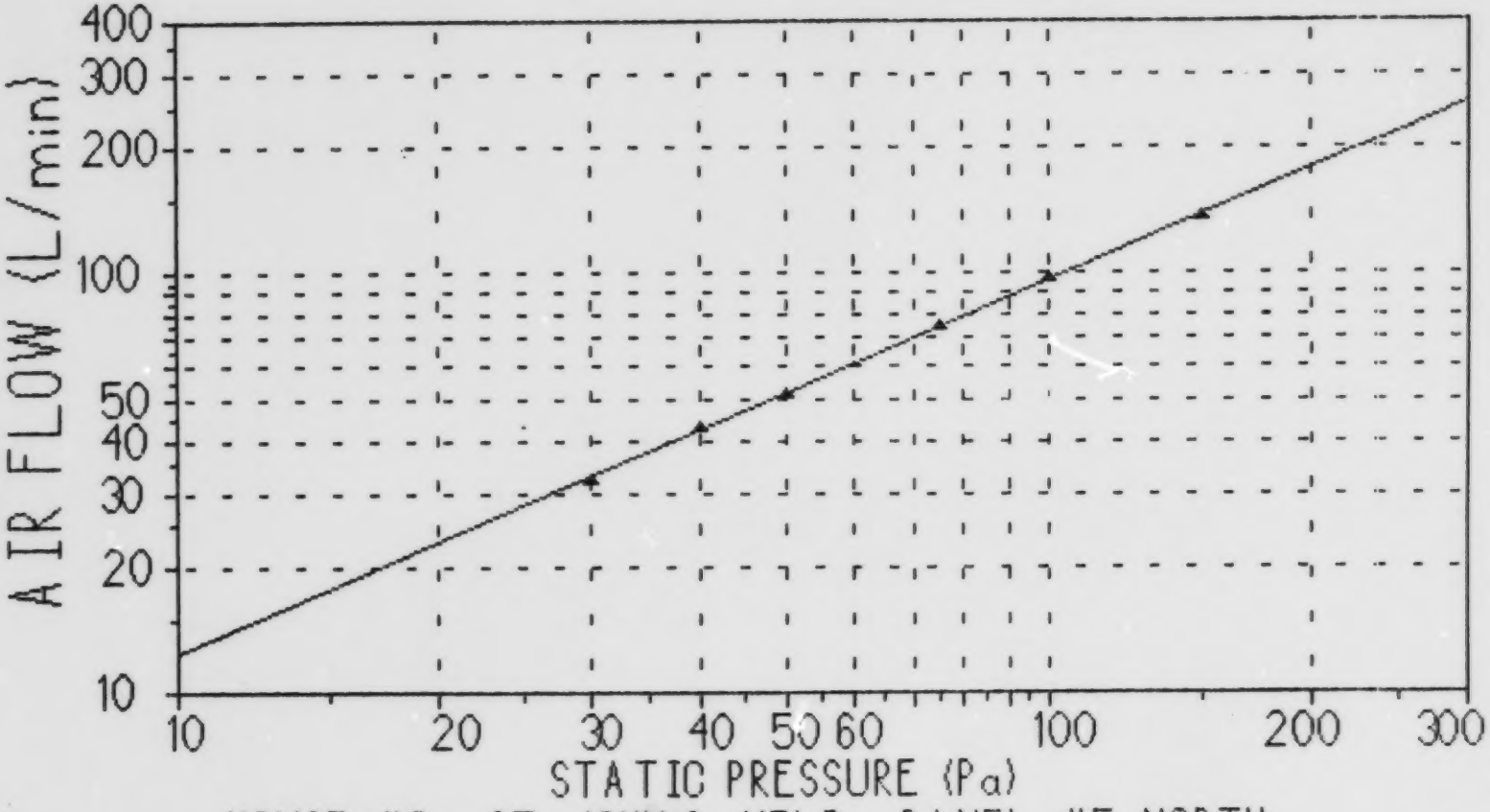
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #4 NORTH.

FOR THESE POINTS, Q(L/min) = 3.792 * P(Pa)**.8249;
REGRESSION COEF = .999; ERRORS: MEAN = 1.40%, MAX = 2.03%.

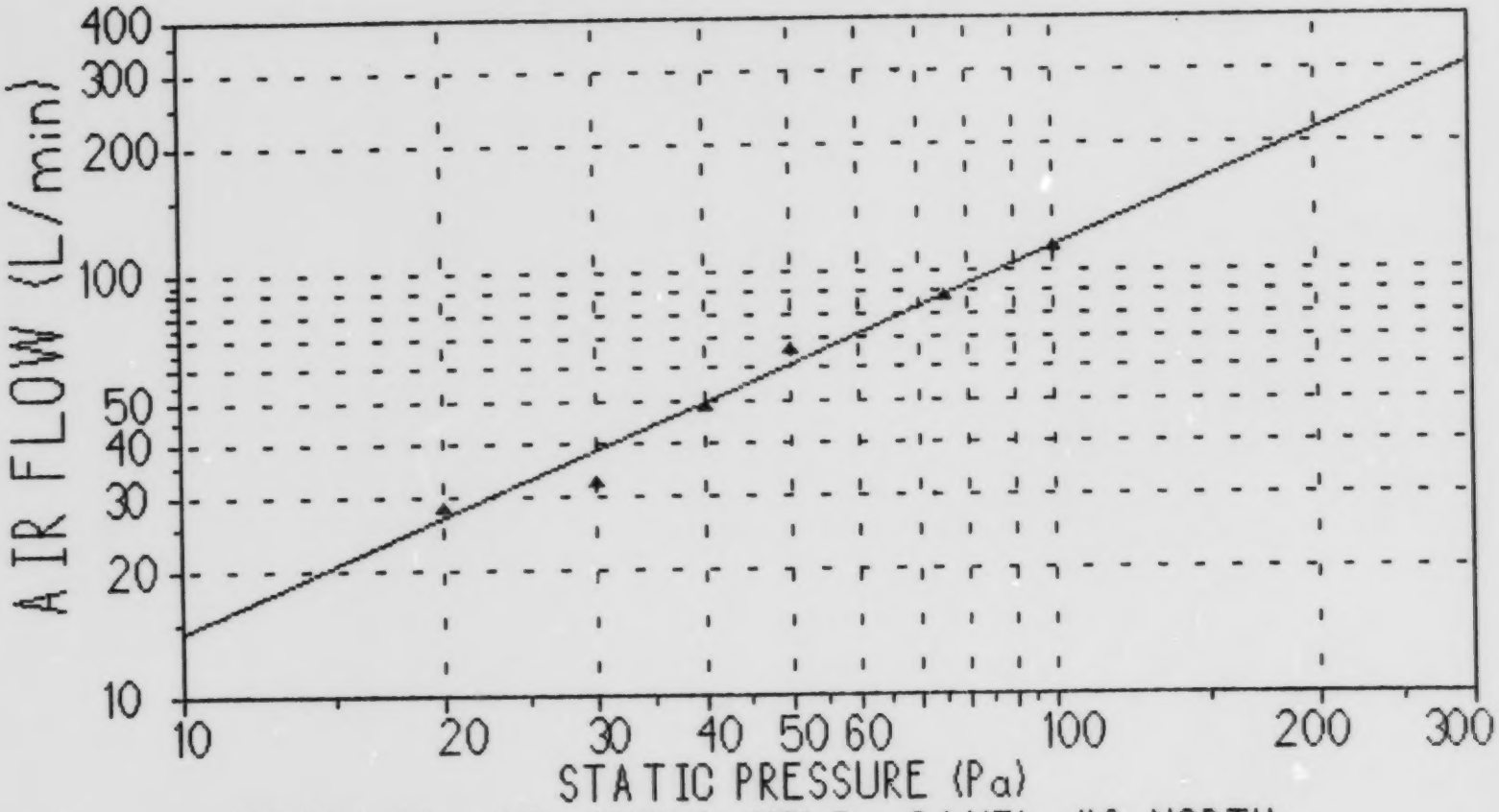
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #5 NORTH.

FOR THESE POINTS, Q(L/min) = 1.600 * P(Pa)** .8889;
REGRESSION COEF = .999; ERRORS: MEAN = .804%, MAX = 2.23%.

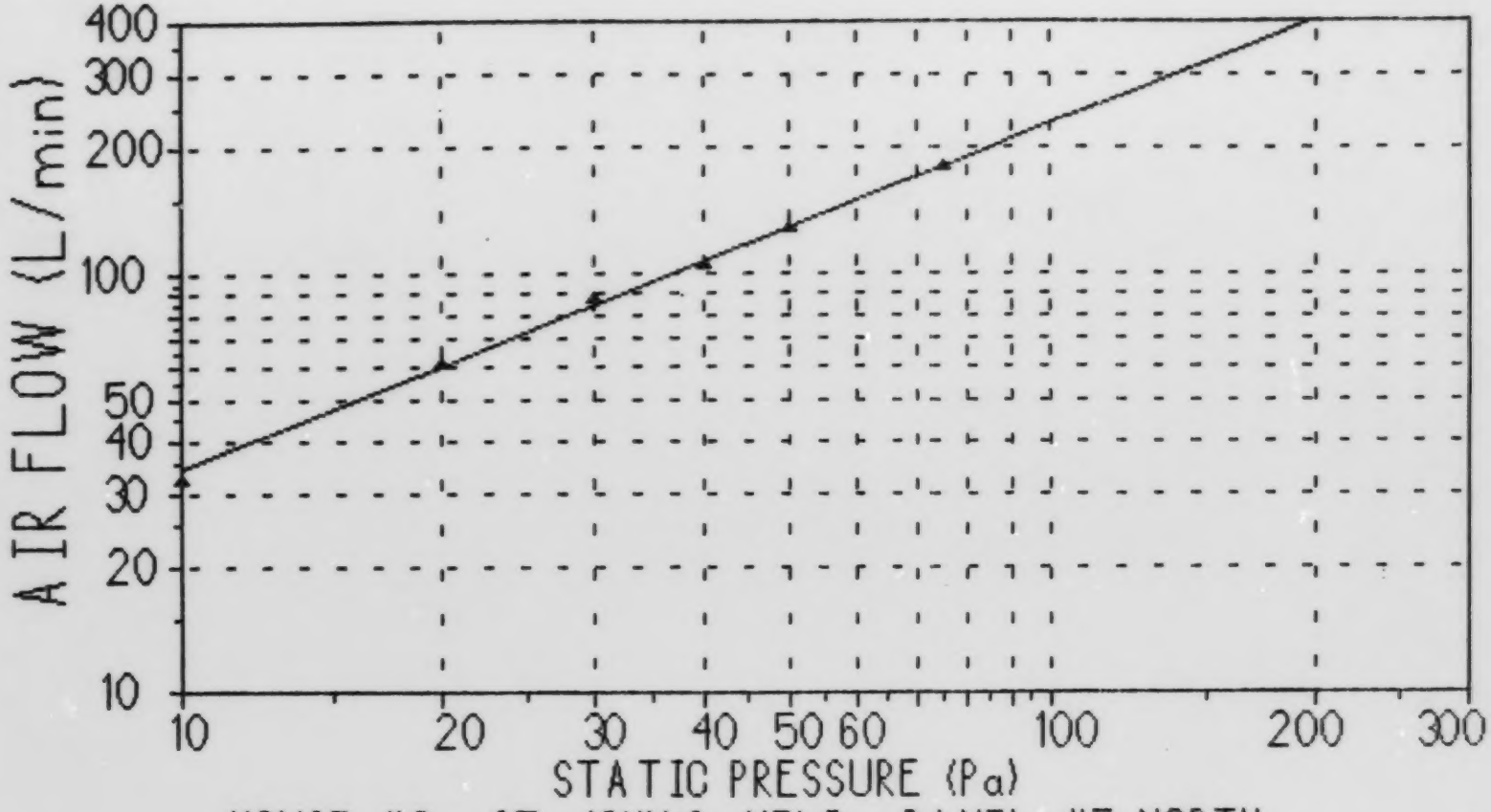
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #6 NORTH.

FOR THESE POINTS, Q(L/min) = 1.766 * P(Pa)**.9058;
REGRESSION COEF = .992; ERRORS: MEAN = 6.00%, MAX = 19.5%.

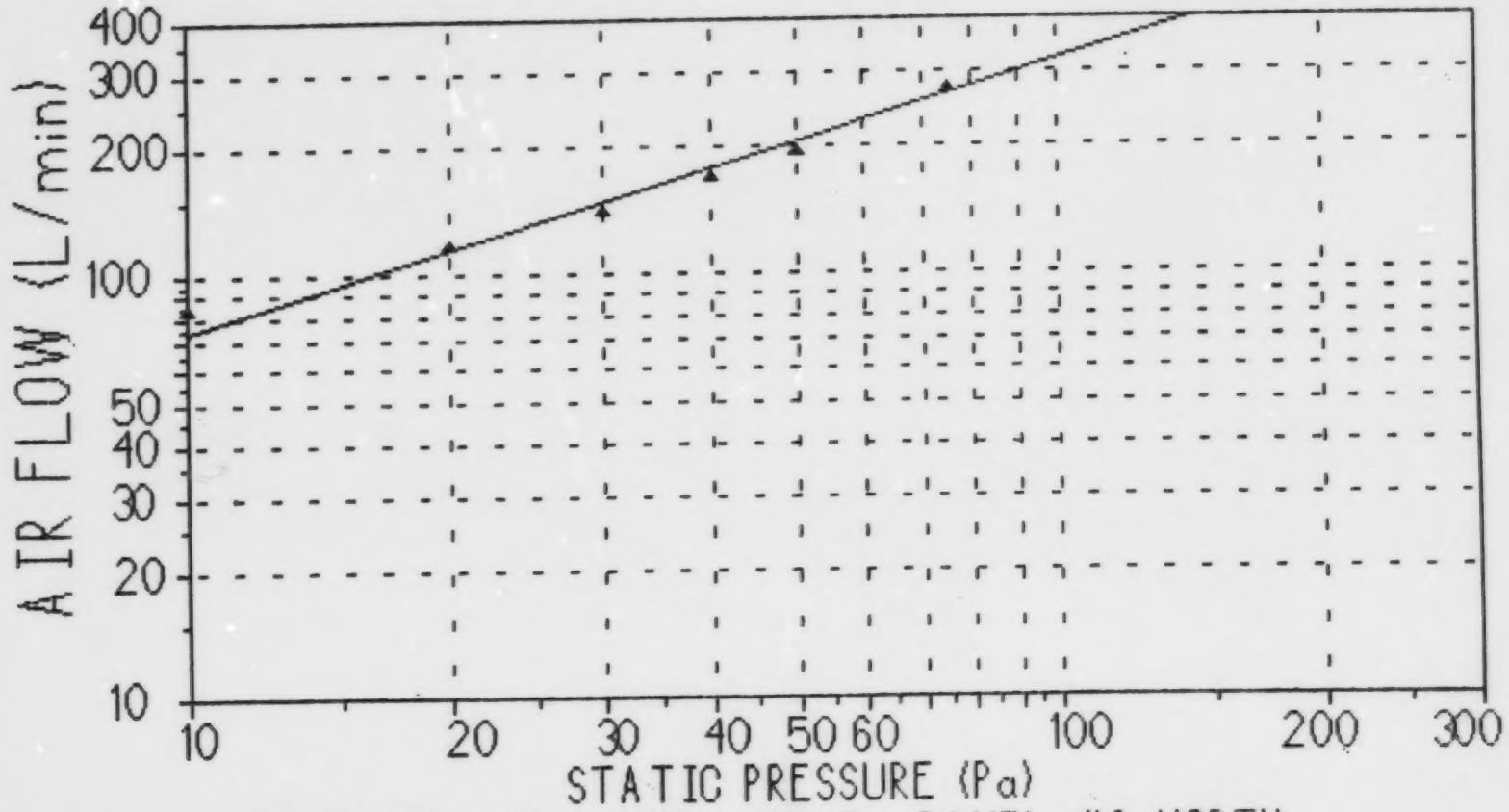
AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE



HOUSE #3 - ST. JOHN'S NFLD - PANEL #7 NORTH.

FOR THESE POINTS, Q(L/min) = 5.156 * P(Pa)**.8225;
REGRESSION COEF = .998; ERRORS: MEAN = 2.32%, MAX = 6.42%.

AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE

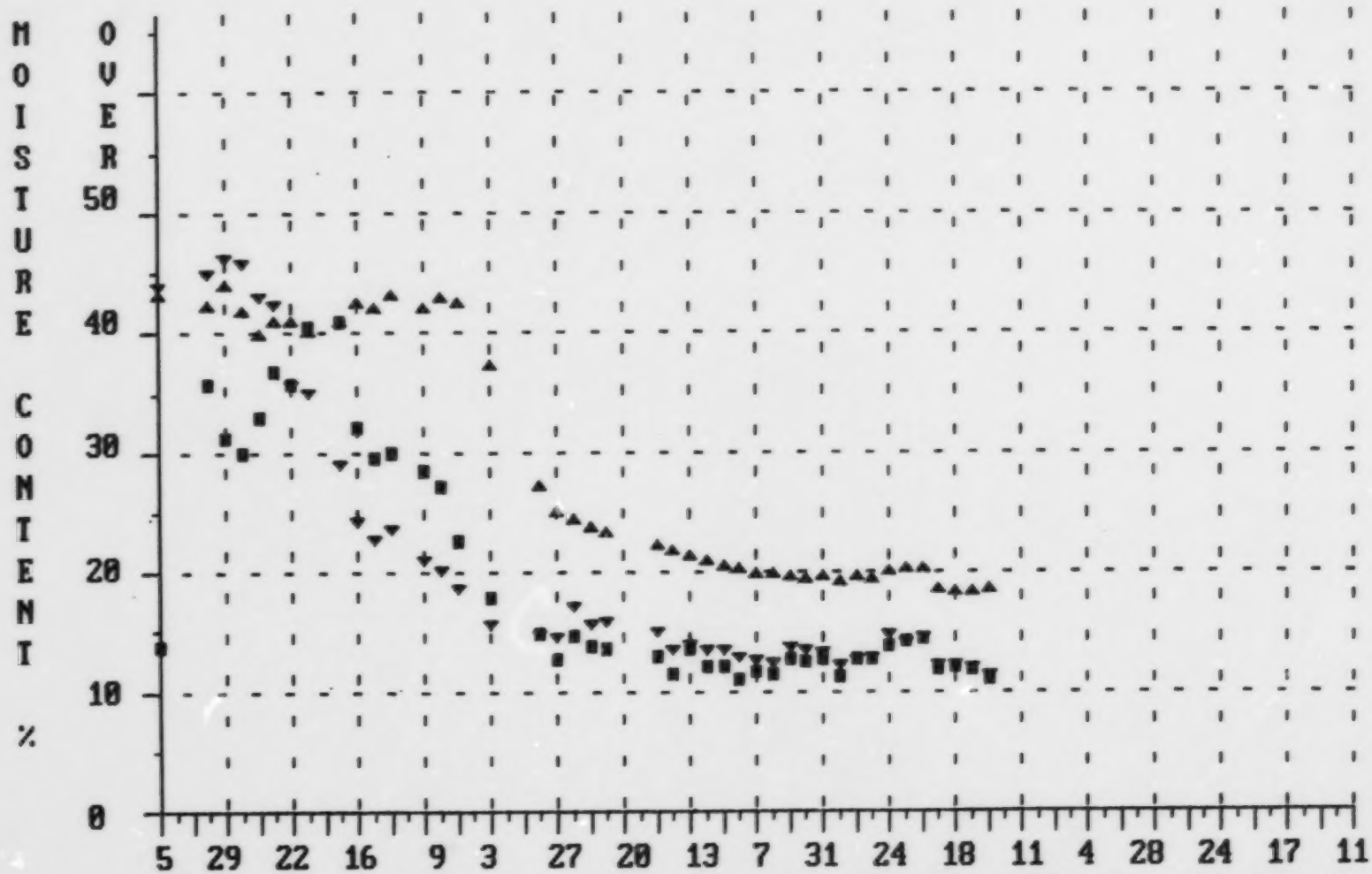


HOUSE #3 - ST. JOHN'S NFLD - PANEL #8 NORTH.

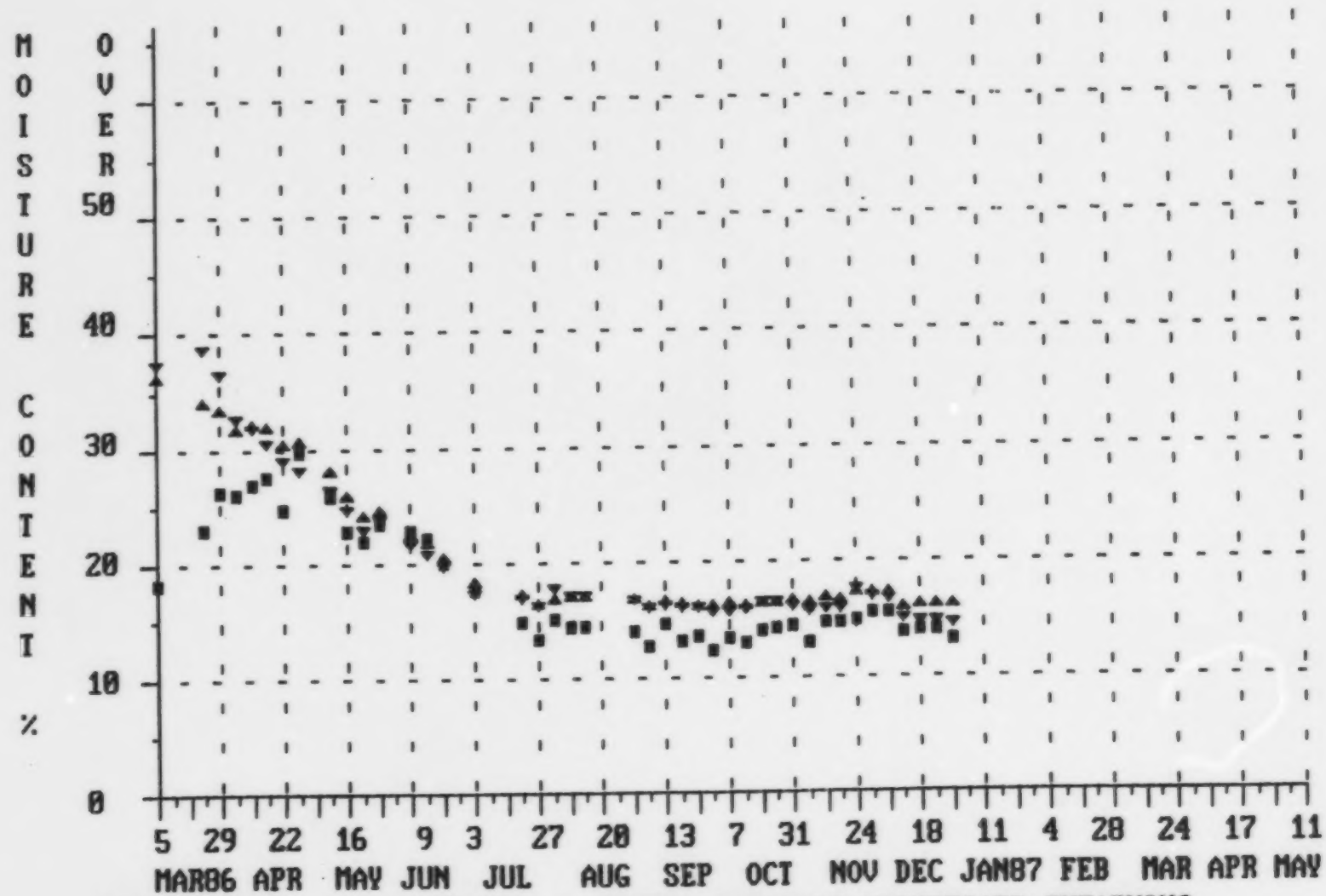
FOR THESE POINTS, Q(L/min) = 16.90 * P(Pa)** .6371;
REGRESSION COEF = .989; ERRORS: MEAN = 5.31%, MAX = 12.4%.

AIR FLOW THROUGH INSULATED CAVITY vs. STATIC PRESSURE

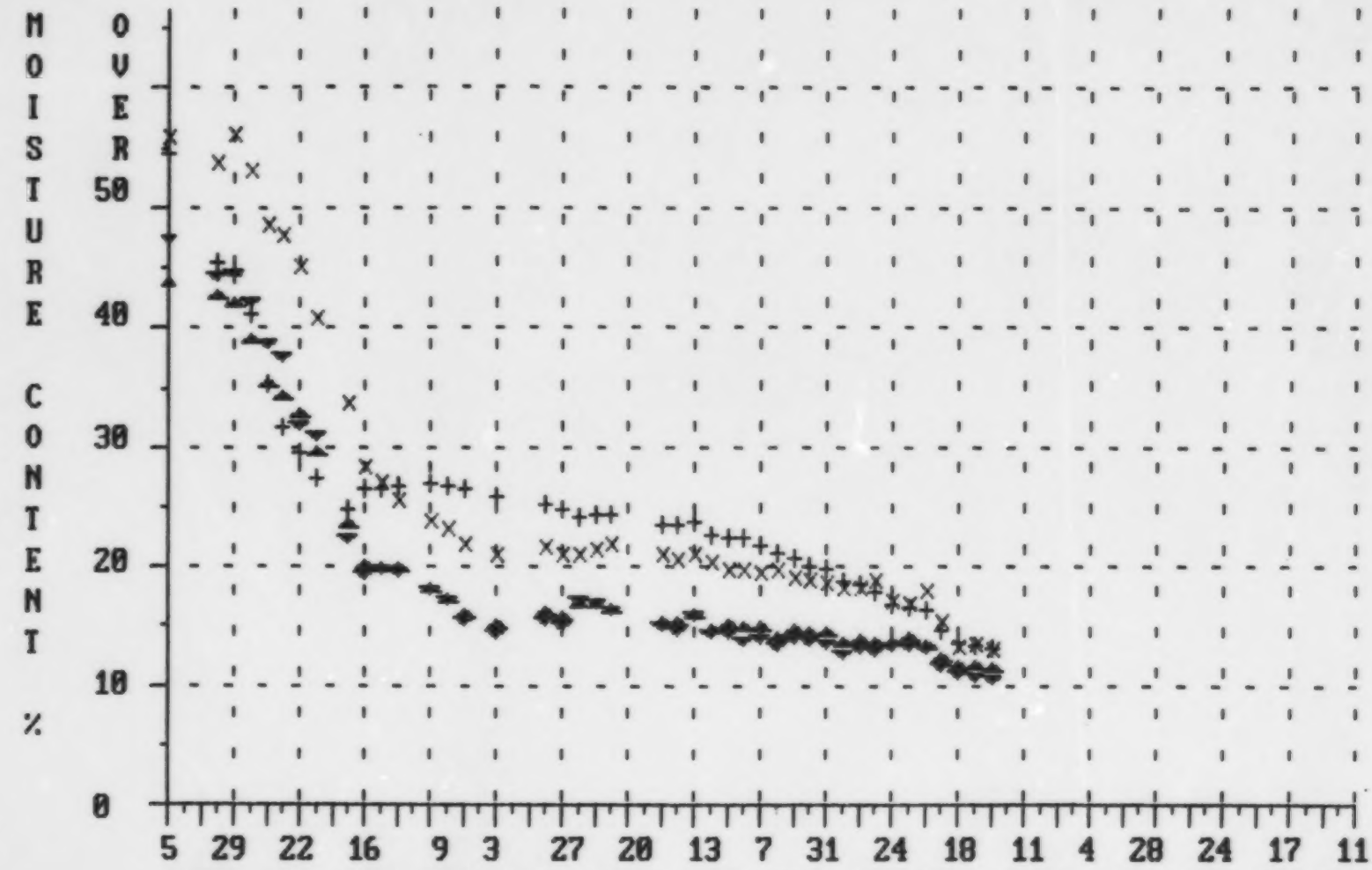
APPENDIX 2


MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

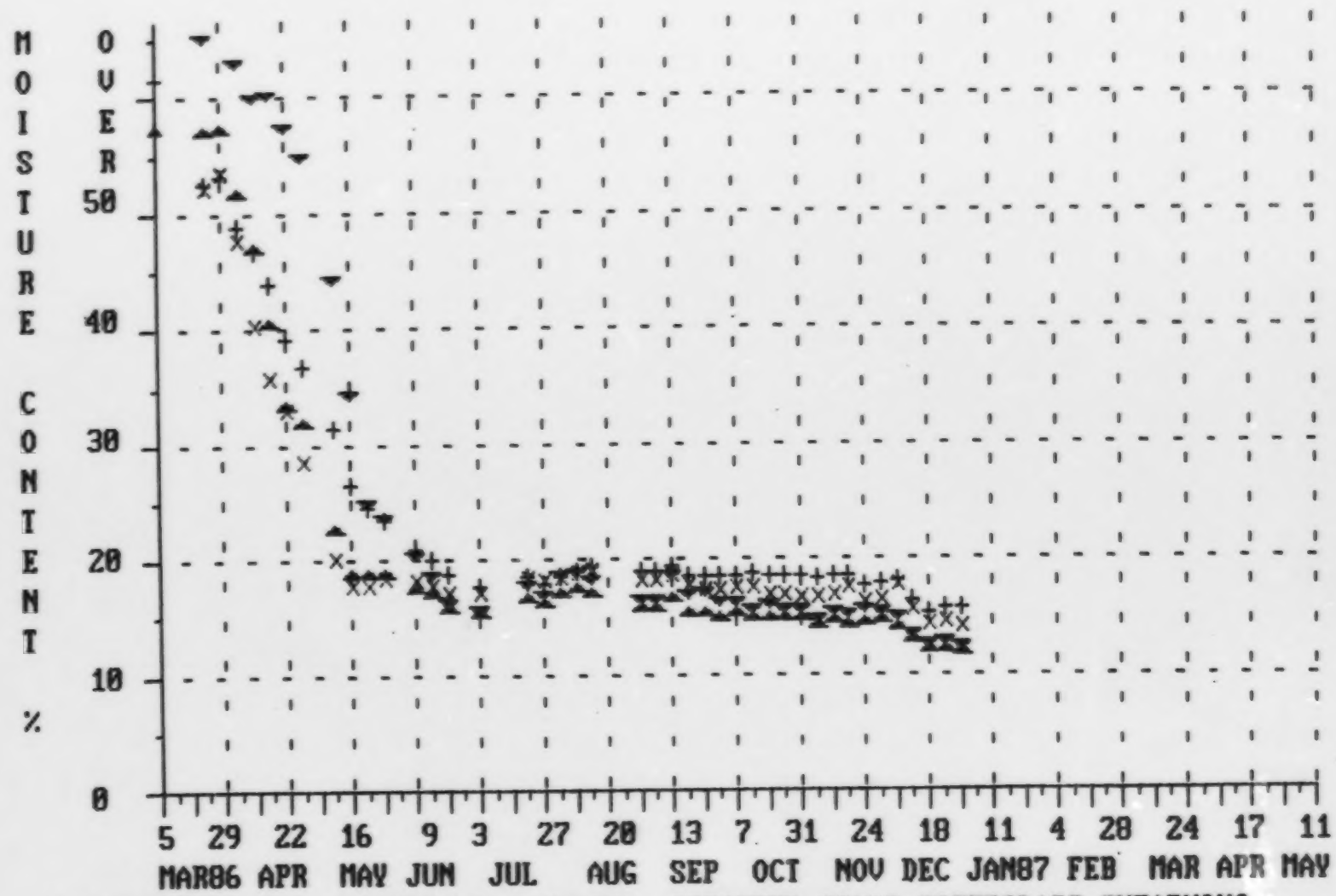
FREDERICTON, N.B - PANEL # 1, SOUTH, NON-STRAPPED WAFERBOARD SHEATHING.


MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

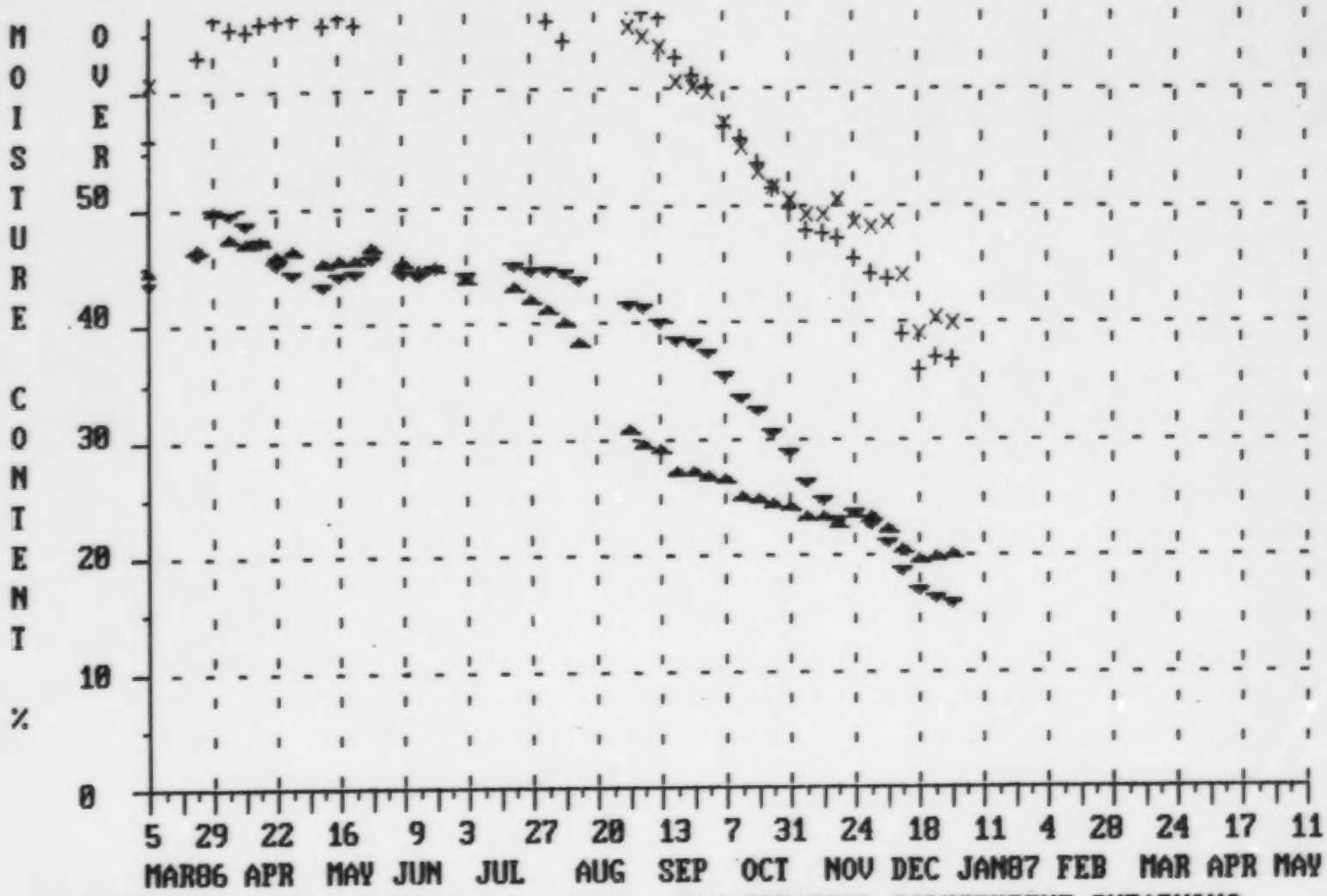
FREDERICTON, N.B - PANEL # 2, SOUTH, STRAPPED WAFERBOARD SHEATHING.


MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

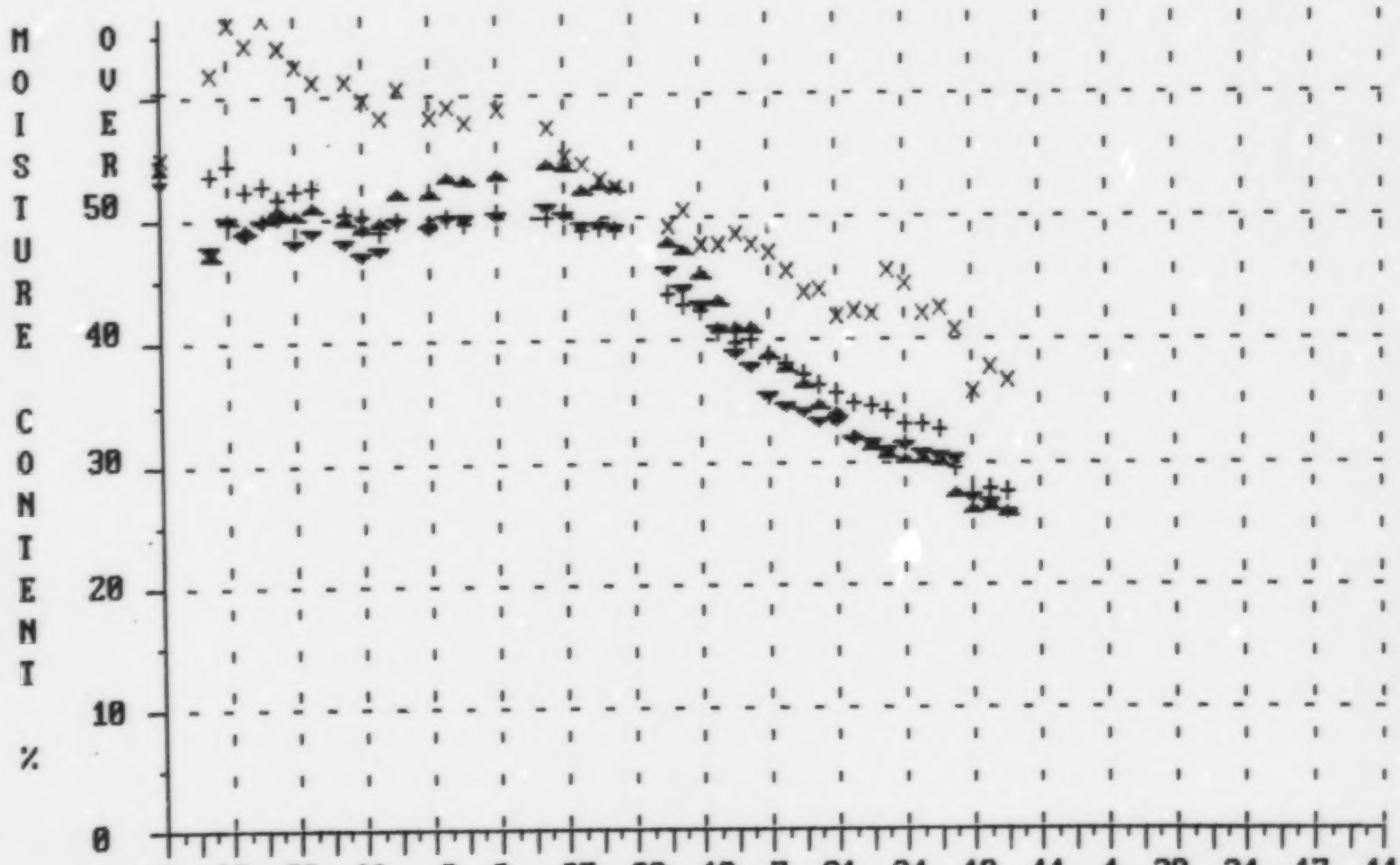
FREDERICTON, N.B - PANELS # 3 (BOTH), NON-STRAPPED RIGID FIBERGLASS SHEATHING.


MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

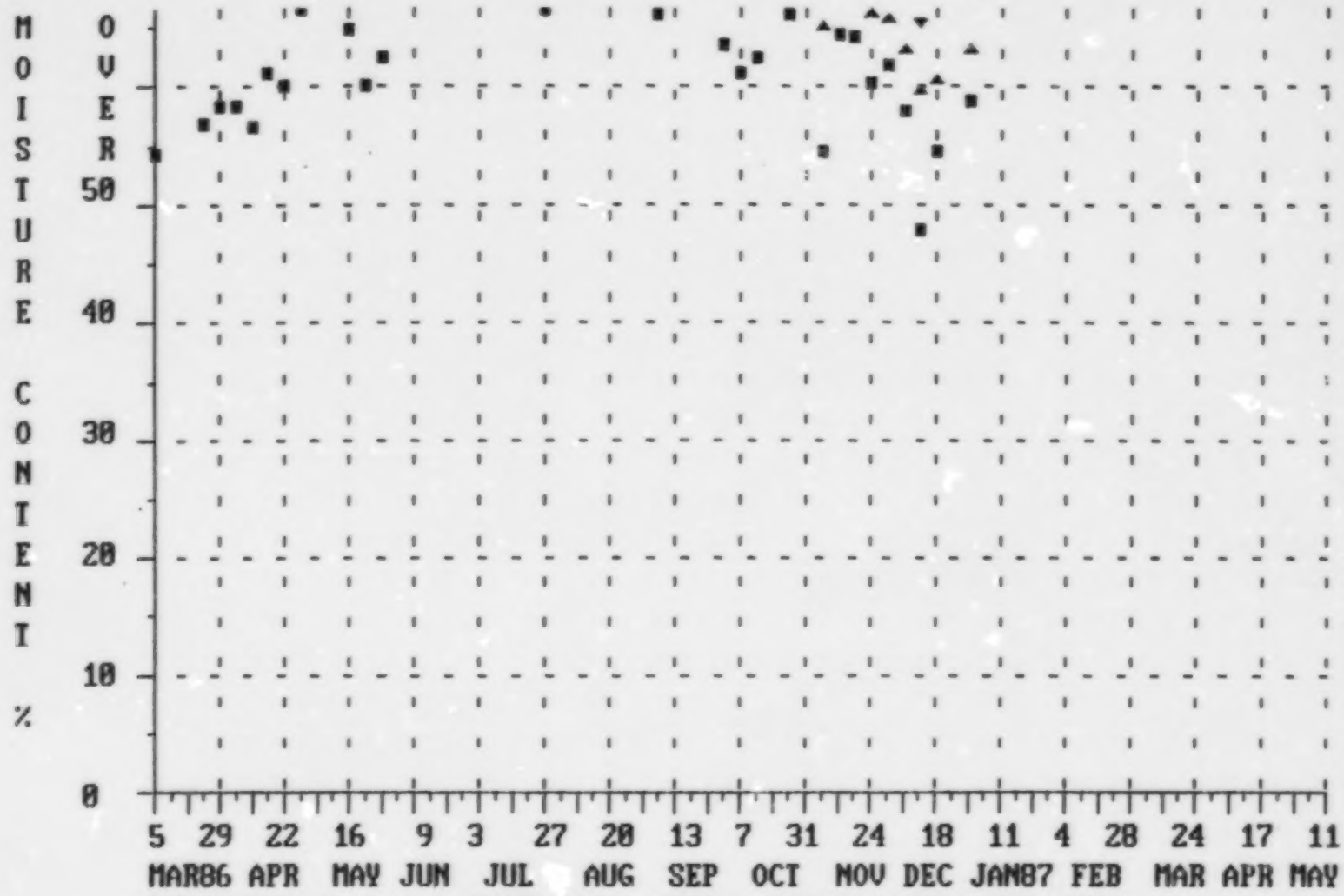
FREDERICTON, N.B - PANELS # 4 (BOTH), STRAPPED RIGID FIBERGLASS SHEATHING.

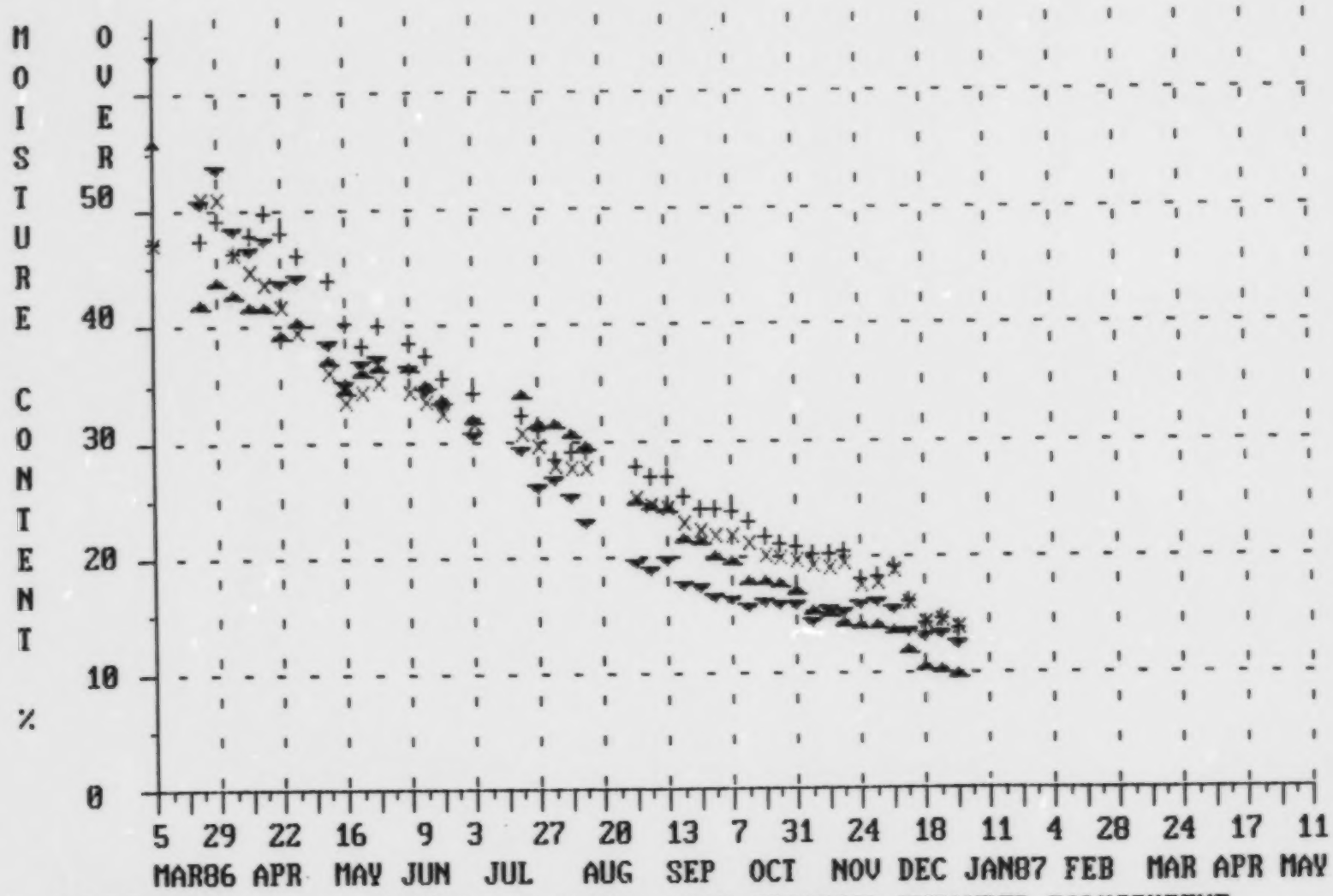

MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

FREDERICTON, N.B - PANELS # 5 (BOTH), NON-STRAPPED POLYSTYRENE SHEATHING.

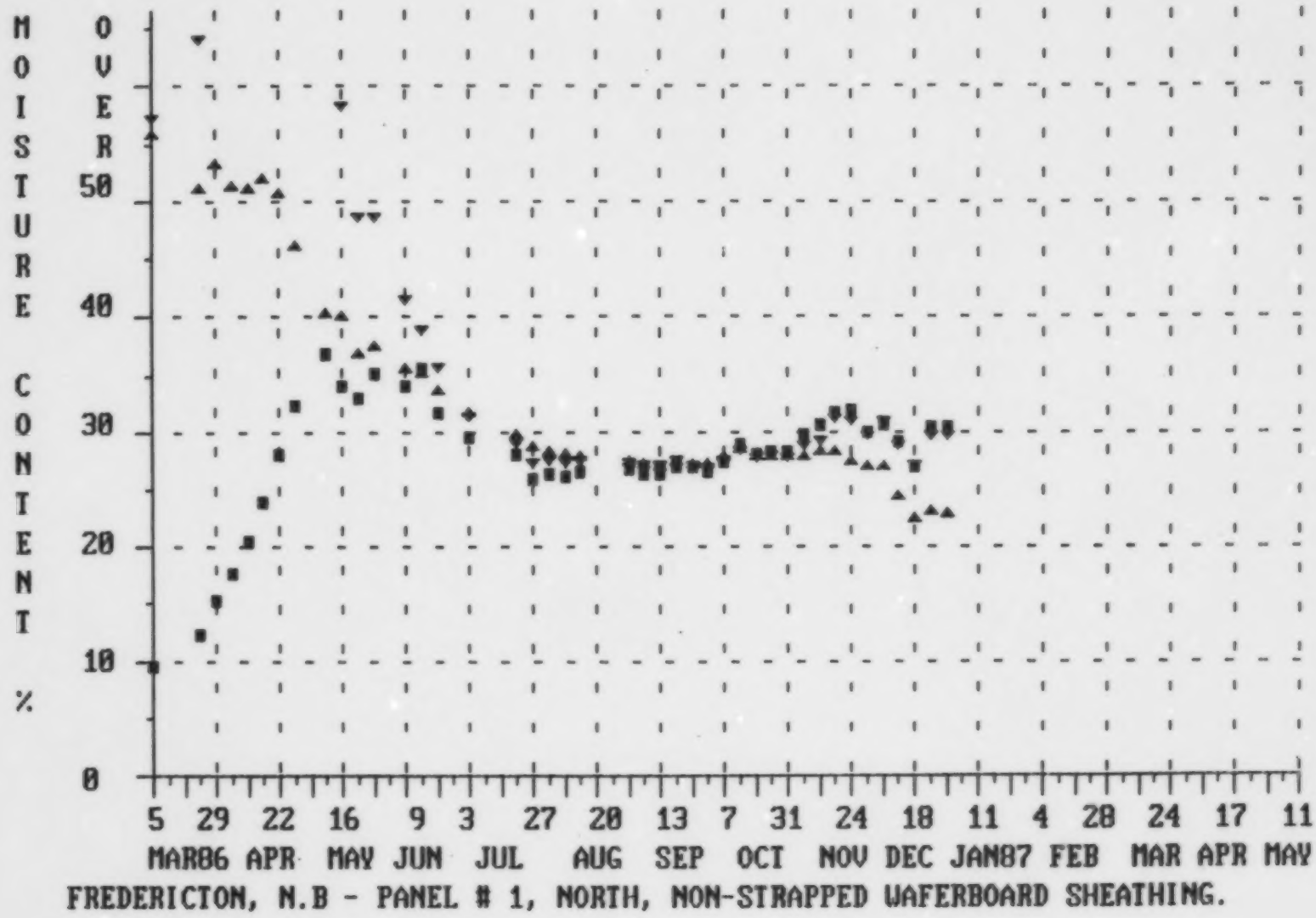

MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

FREDERICTON, N.B - PANELS # 6 (BOTH), STRAPPED POLYSTYRENE SHEATHING.

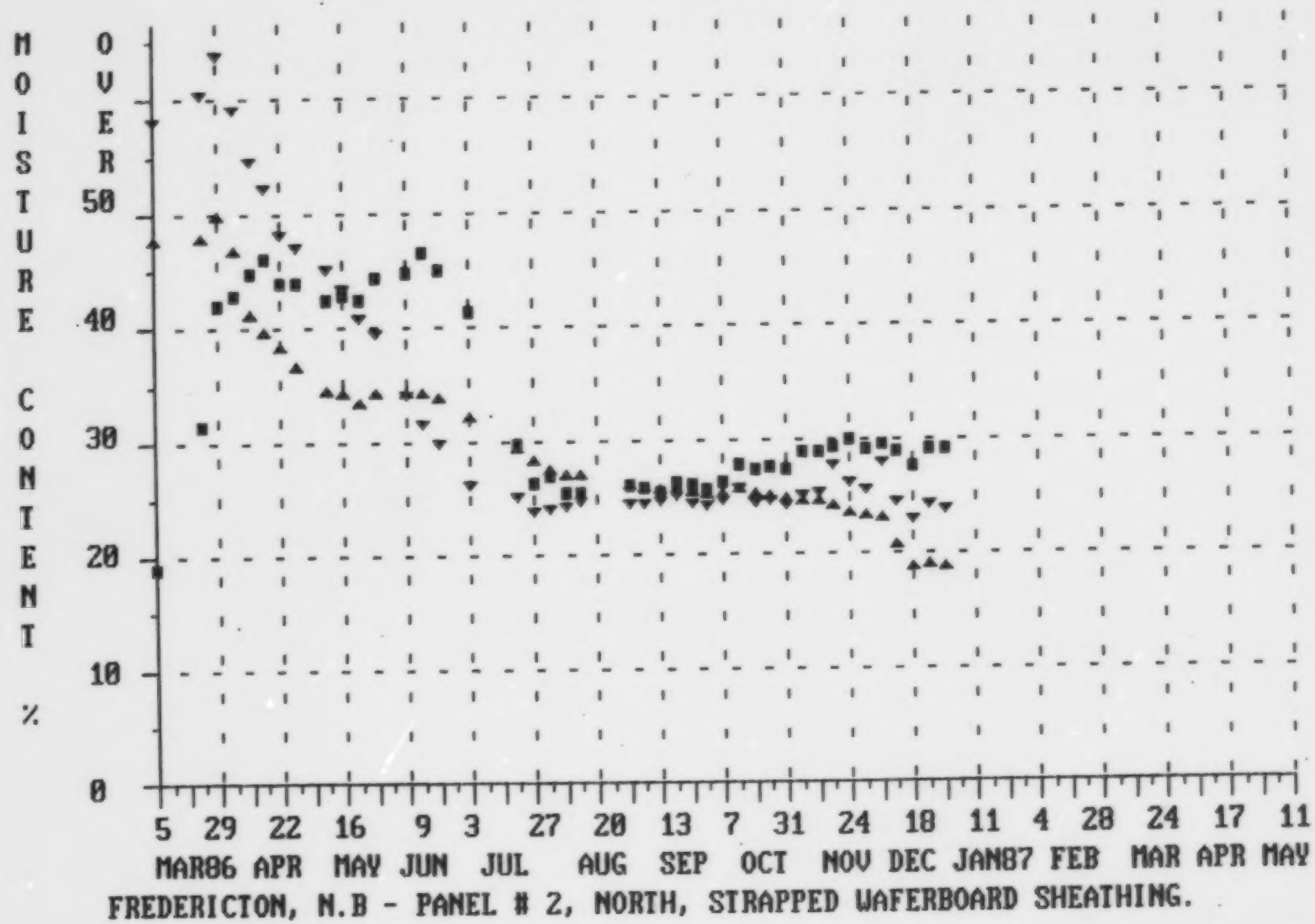

MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY
FREDERICTON, N.B - PANEL # 7, SOUTH, NON-STRAPPED CELLULOSE.


MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

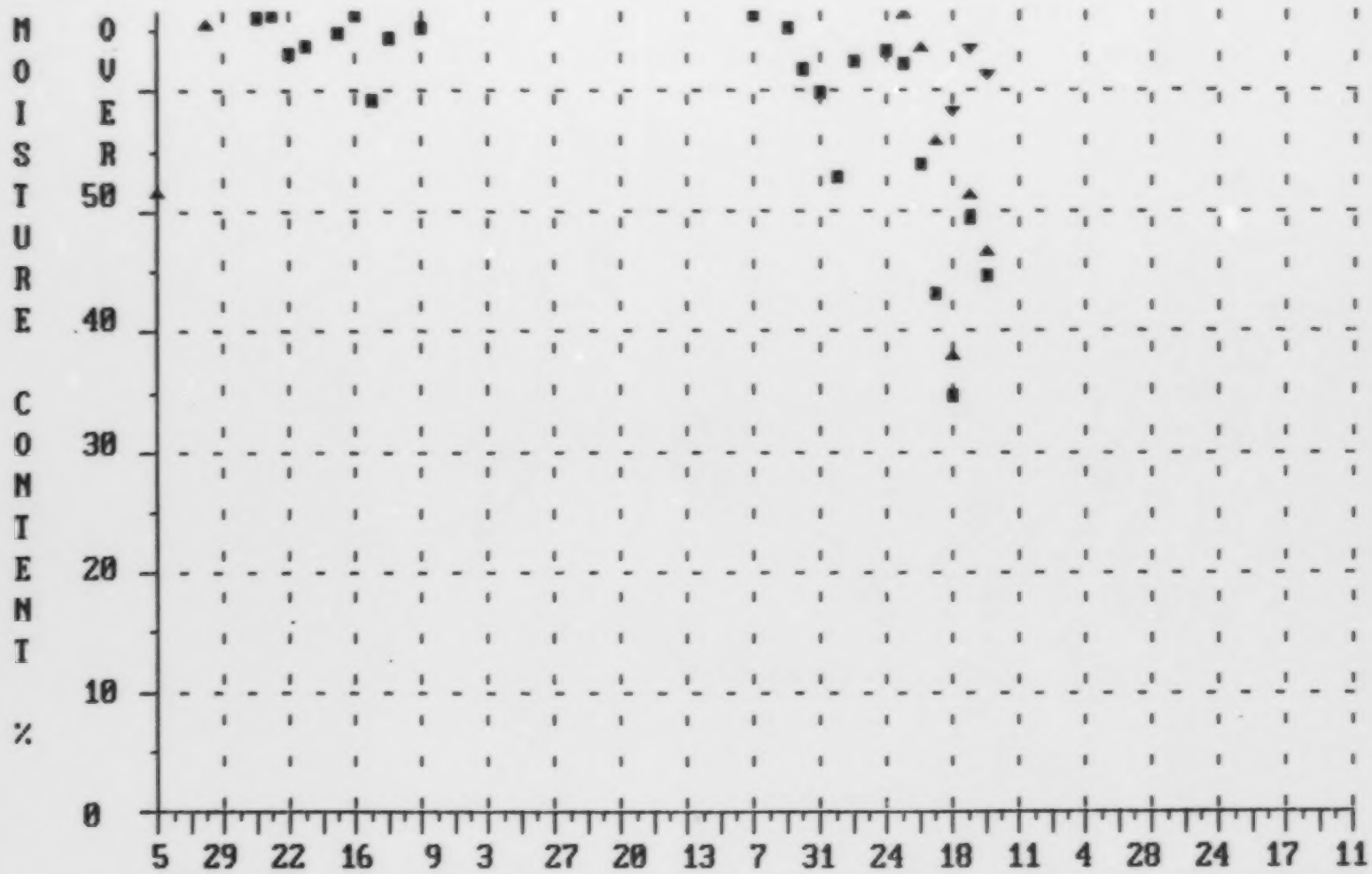
FREDERICTON, N.B - PANELS # 8 (BOTH), NON-STRAPPED EXPANDED POLYSTYRENE.


MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

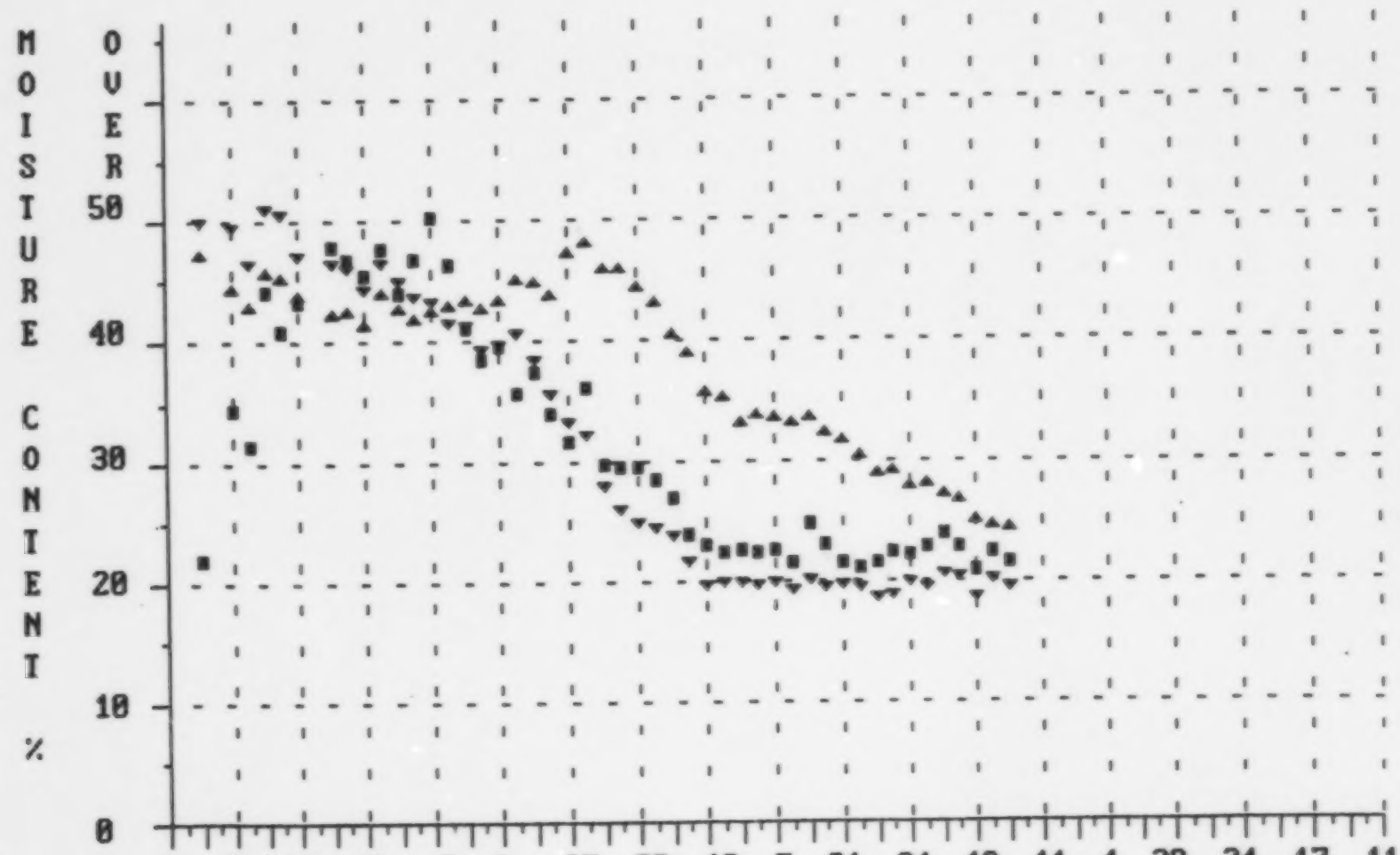
FREDERICTON, N.B - PANEL # 1, NORTH, NON-STRAPPED WAFERBOARD SHEATHING.


MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

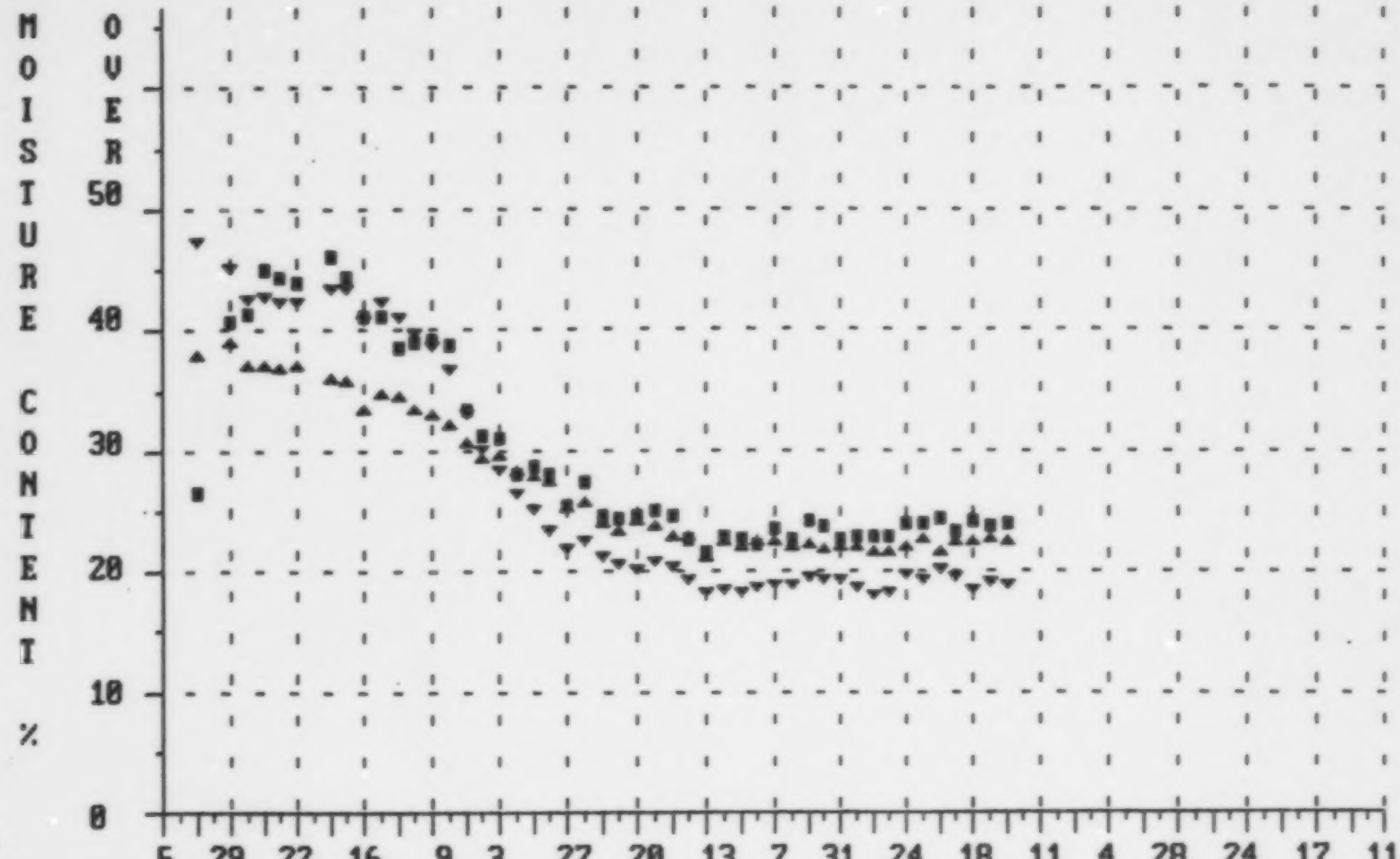
FREDERICTON, N.B - PANEL # 2, NORTH, STRAPPED WAFERBOARD SHEATHING.


MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

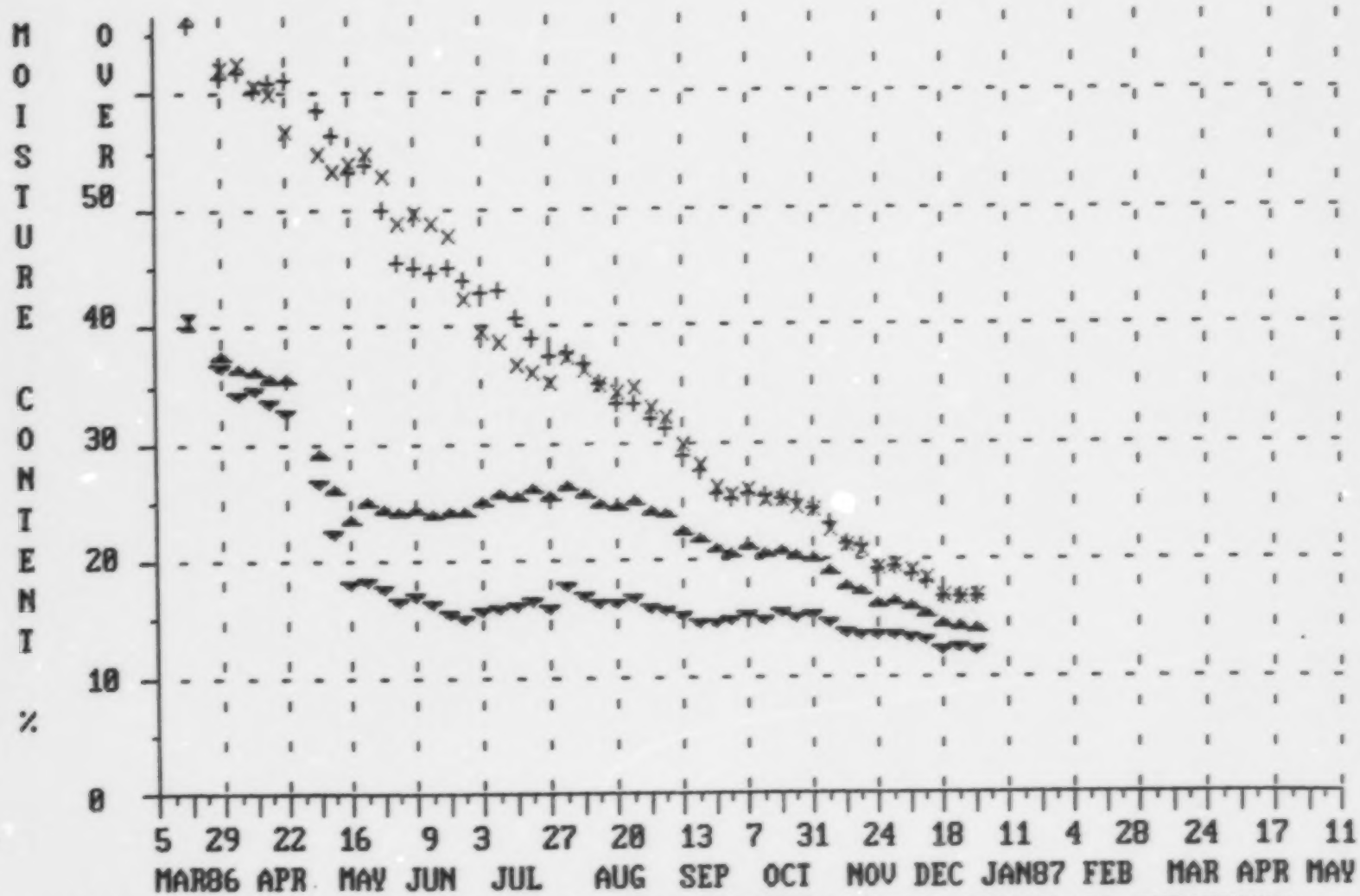
FREDERICTON, N.B - PANEL # 7, NORTH, NON-STRAPPED CELLULOSE.


MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 28 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

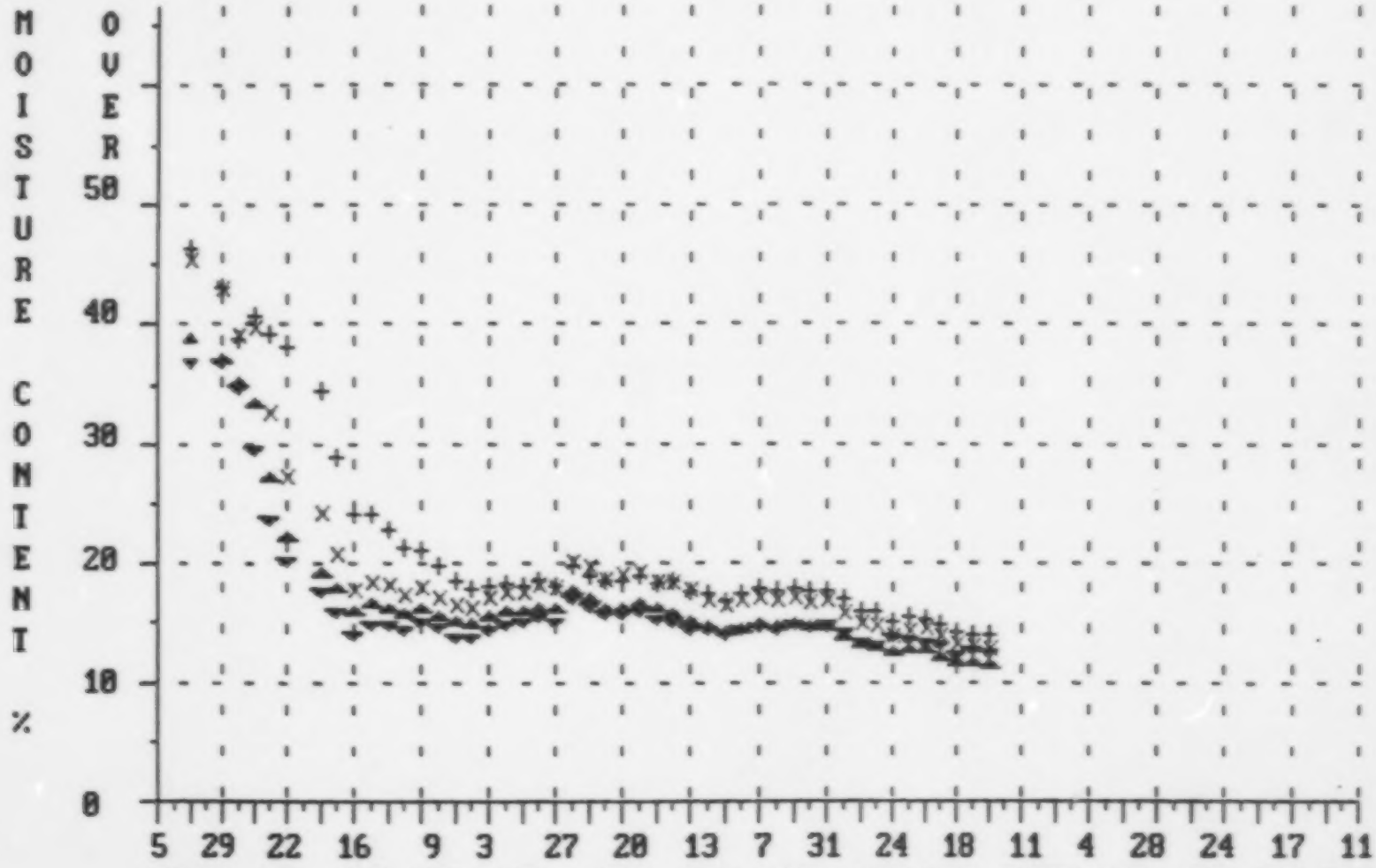
HALIFAX, N.S. - PANEL # 1, SOUTH, NON-STRAPPED WAFERBOARD SHEATHING.


MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

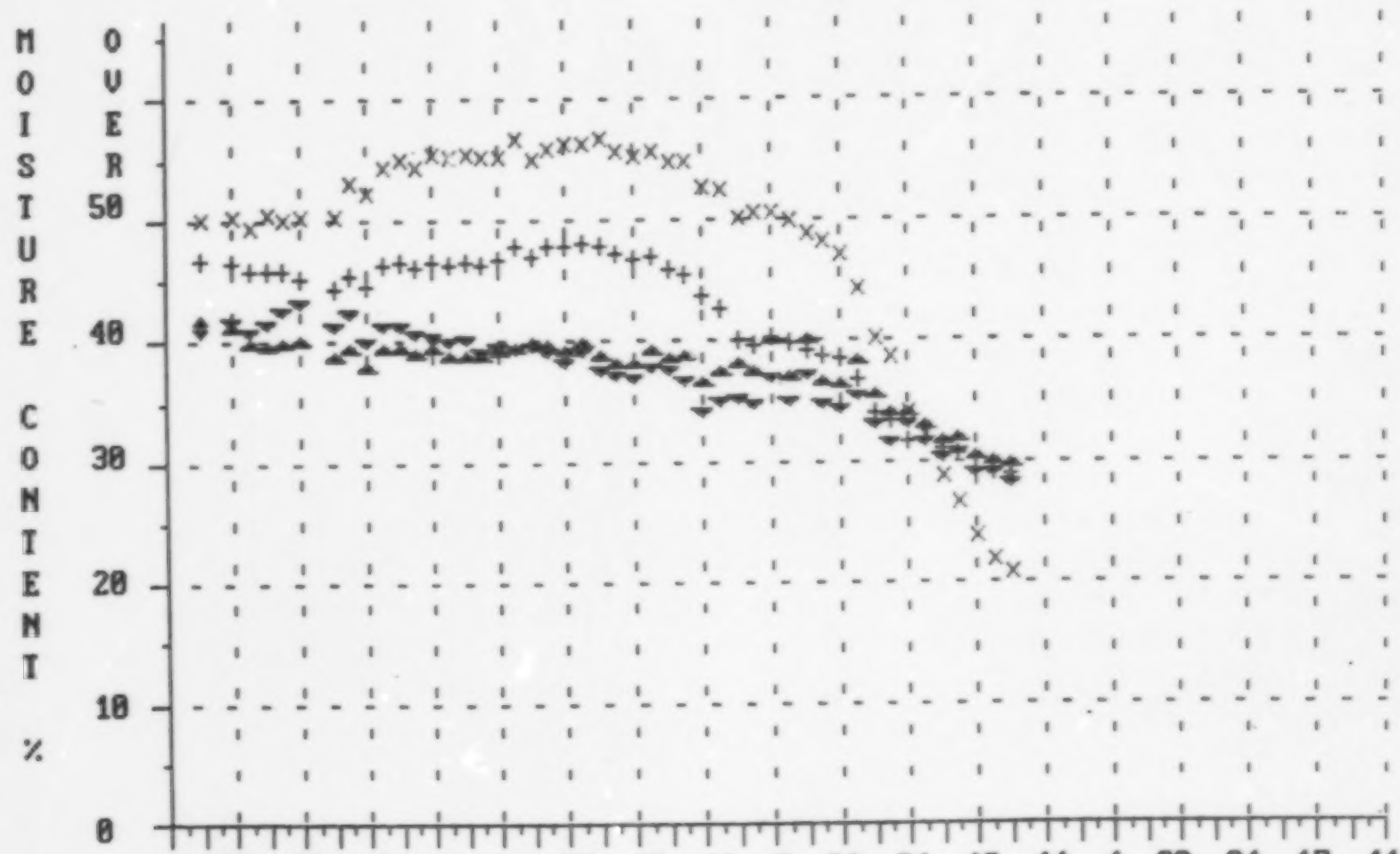
HALIFAX, N.S. - PANEL # 2, SOUTH, STRAPPED WAFERBOARD SHEATHING.


MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

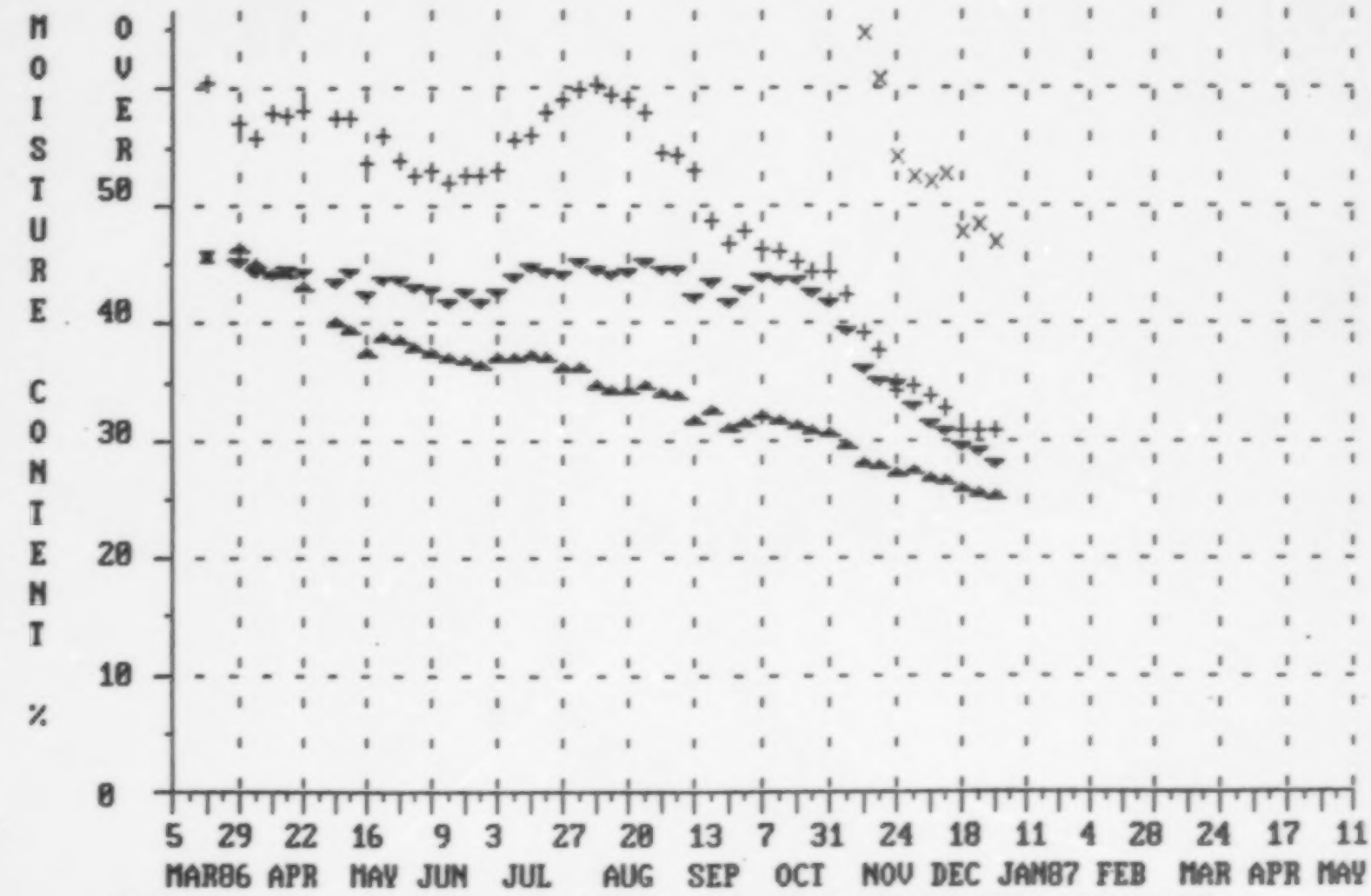
HALIFAX, N.S. - PANELS # 3 (BOTH), NON-STRAPPED RIGID FIBERGLASS SHEATHING.


MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

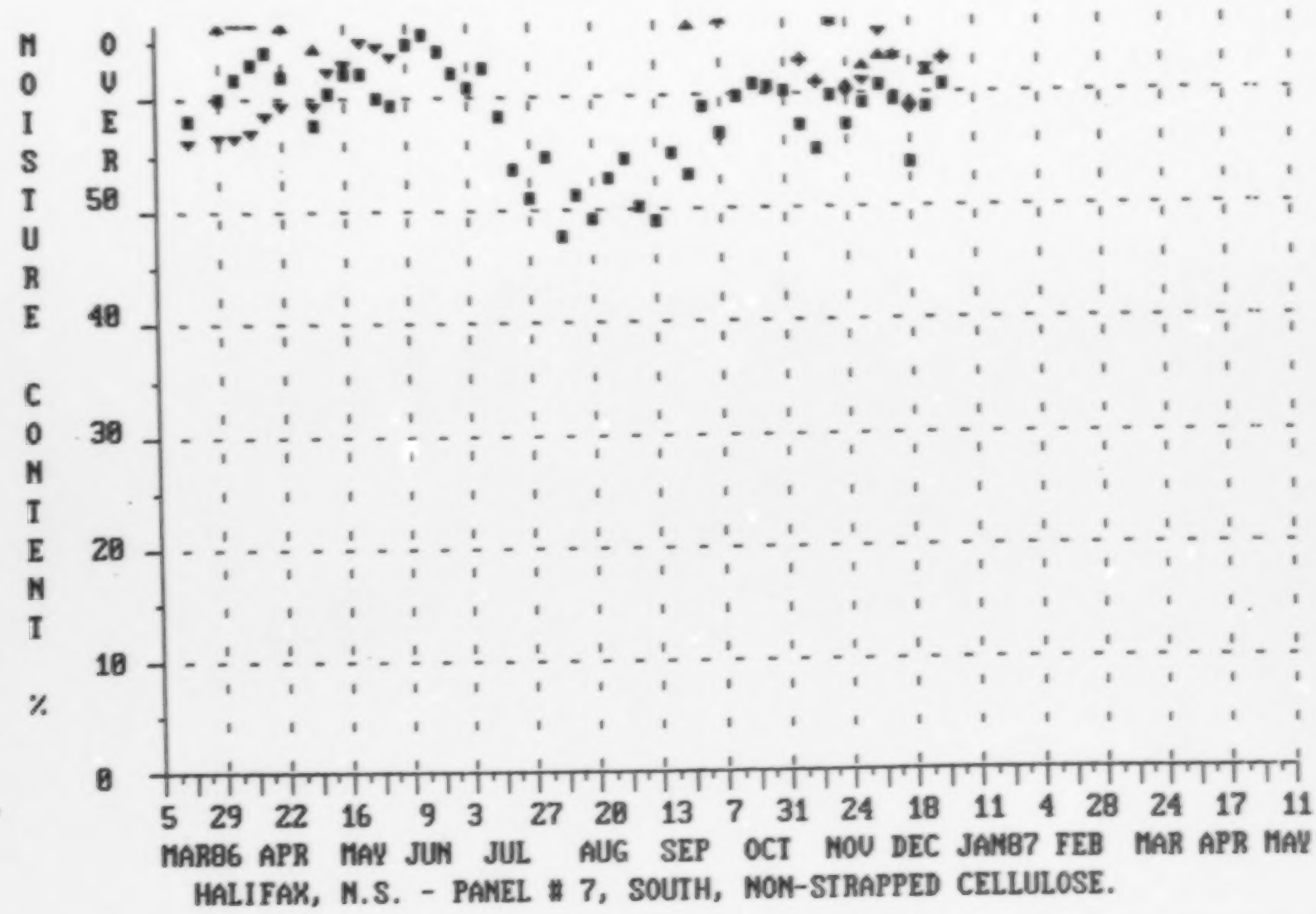
HALIFAX, N.S. - PANELS # 4 (BOTH), STRAPPED RIGID FIBERGLASS SHEATHING.

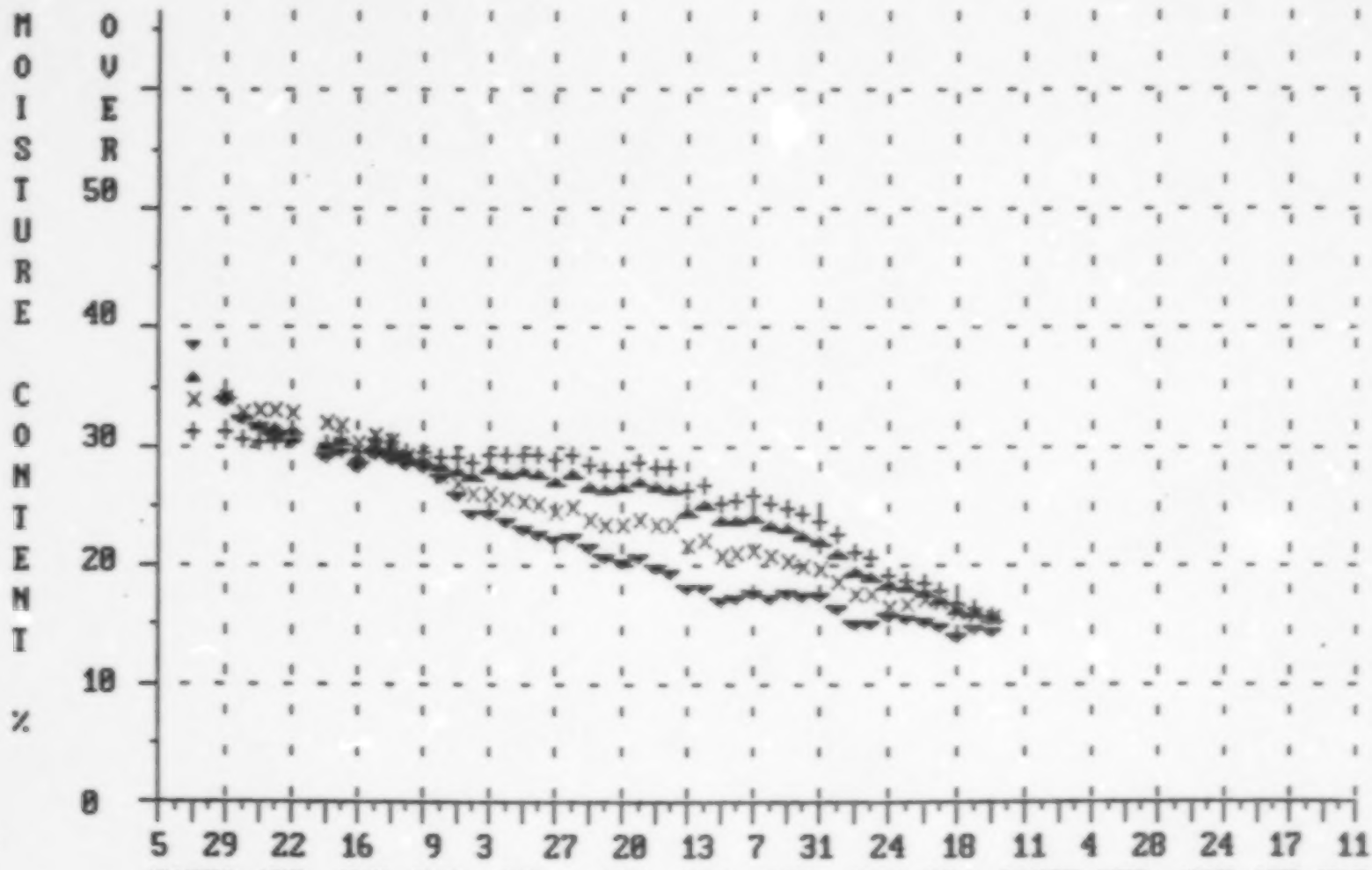

MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

HALIFAX, N.S. - PANELS # 5 (BOTH), NON-STRAPPED POLYSTYRENE SHEATHING.

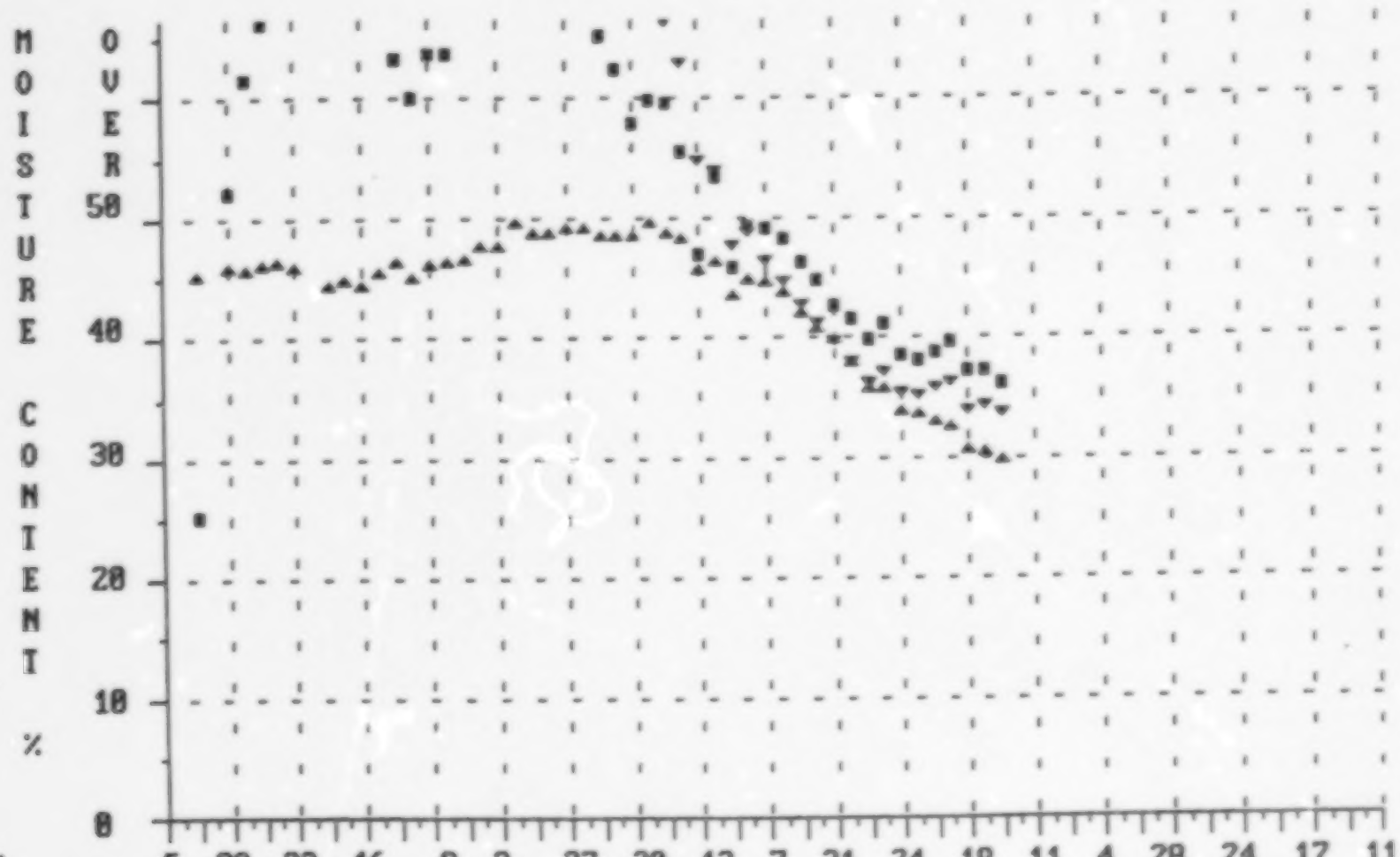

MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

HALIFAX, N.S. - PANELS # 6 (BOTH), STRAPPED POLYSTYRENE SHEATHING.

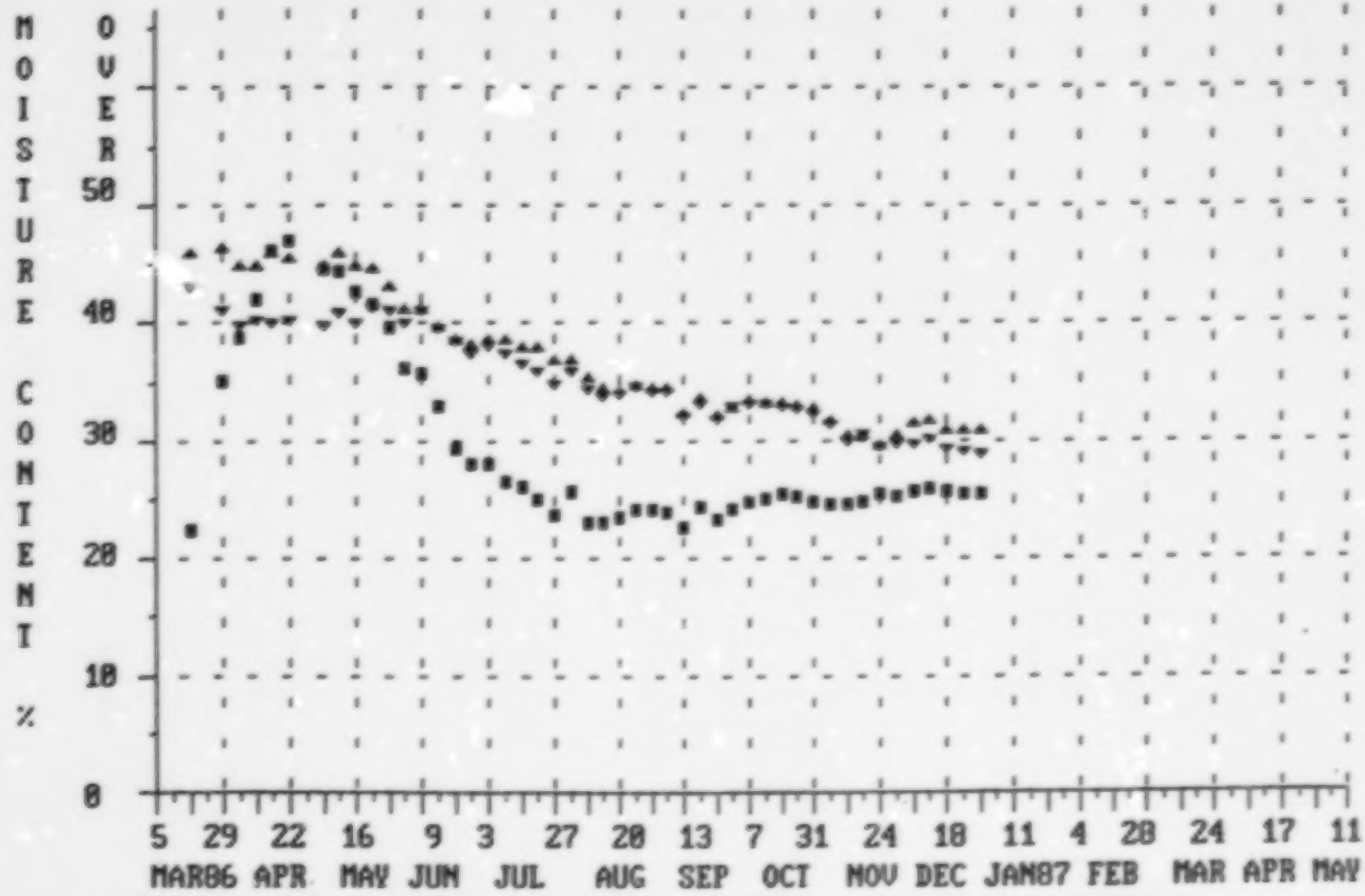

MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY
HALIFAX, N.S. - PANEL # 7, SOUTH, NON-STRAPPED CELLULOSE.


MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 28 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

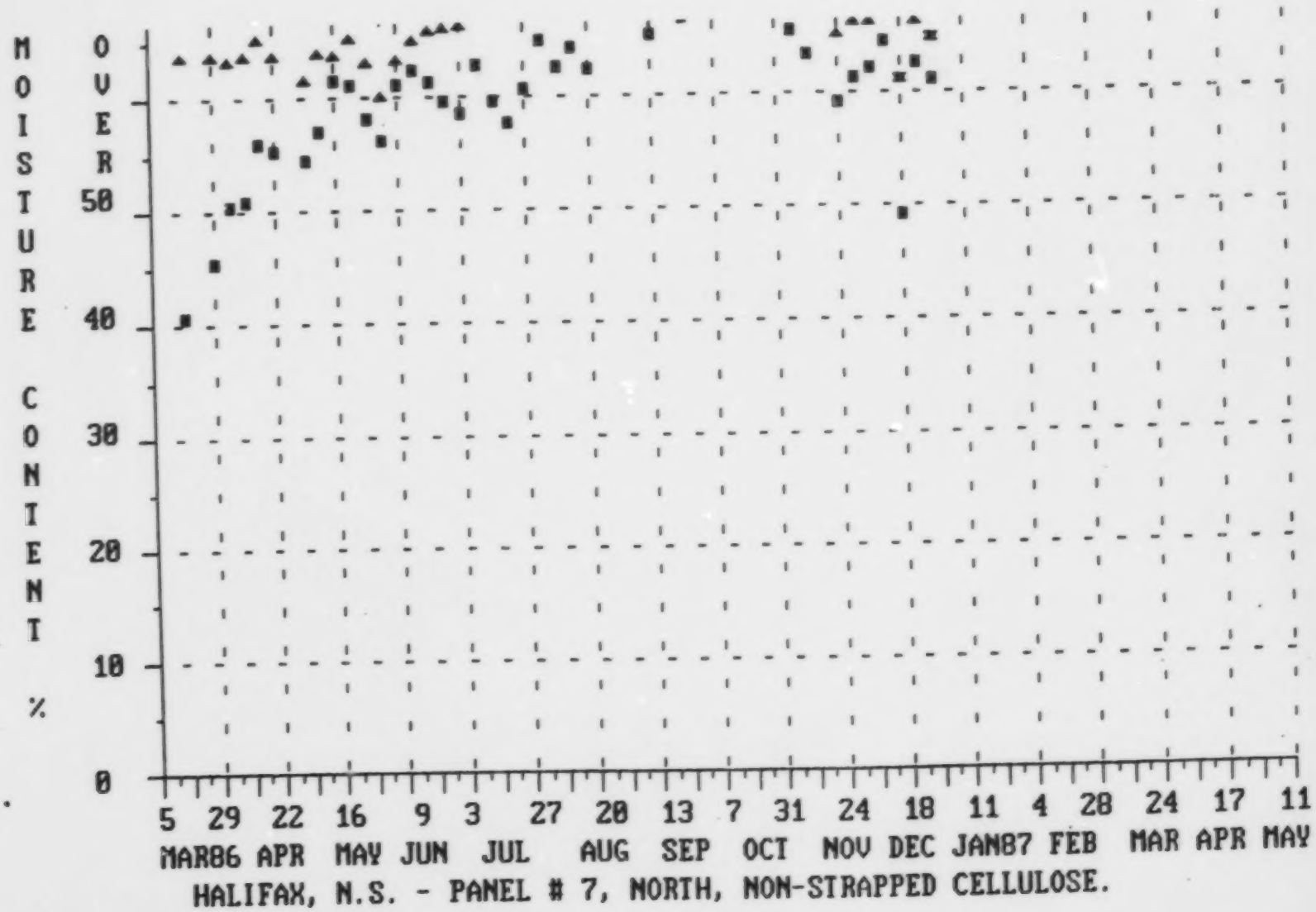
HALIFAX, N.S. - PANELS # 8 (BOTH), NON-STRAPPED EXPANDED POLYSTYRENE.

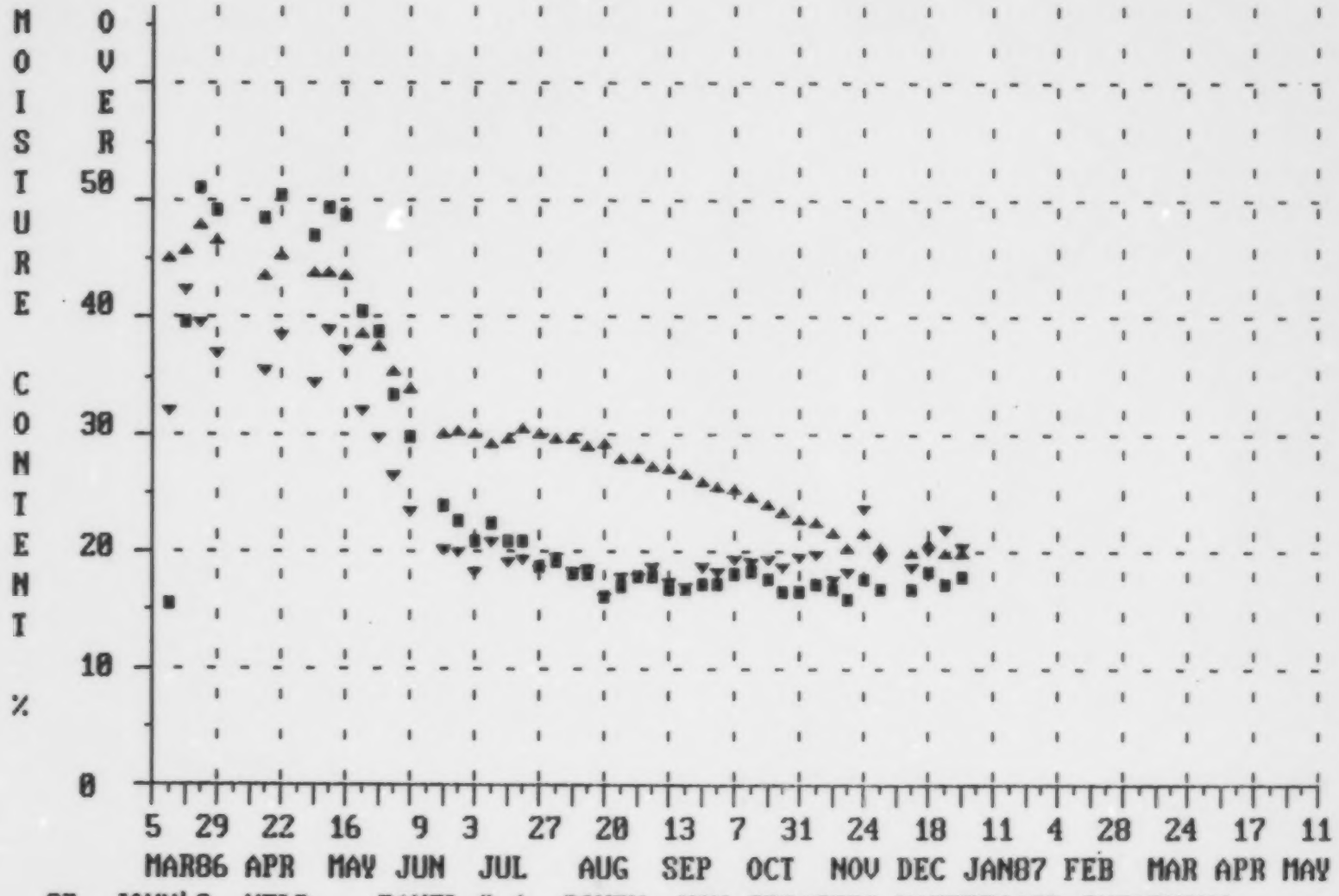

MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

HALIFAX, N.S. - PANEL # 1, NORTH, NON-STRAPPED WAFERBOARD SHEATHING.

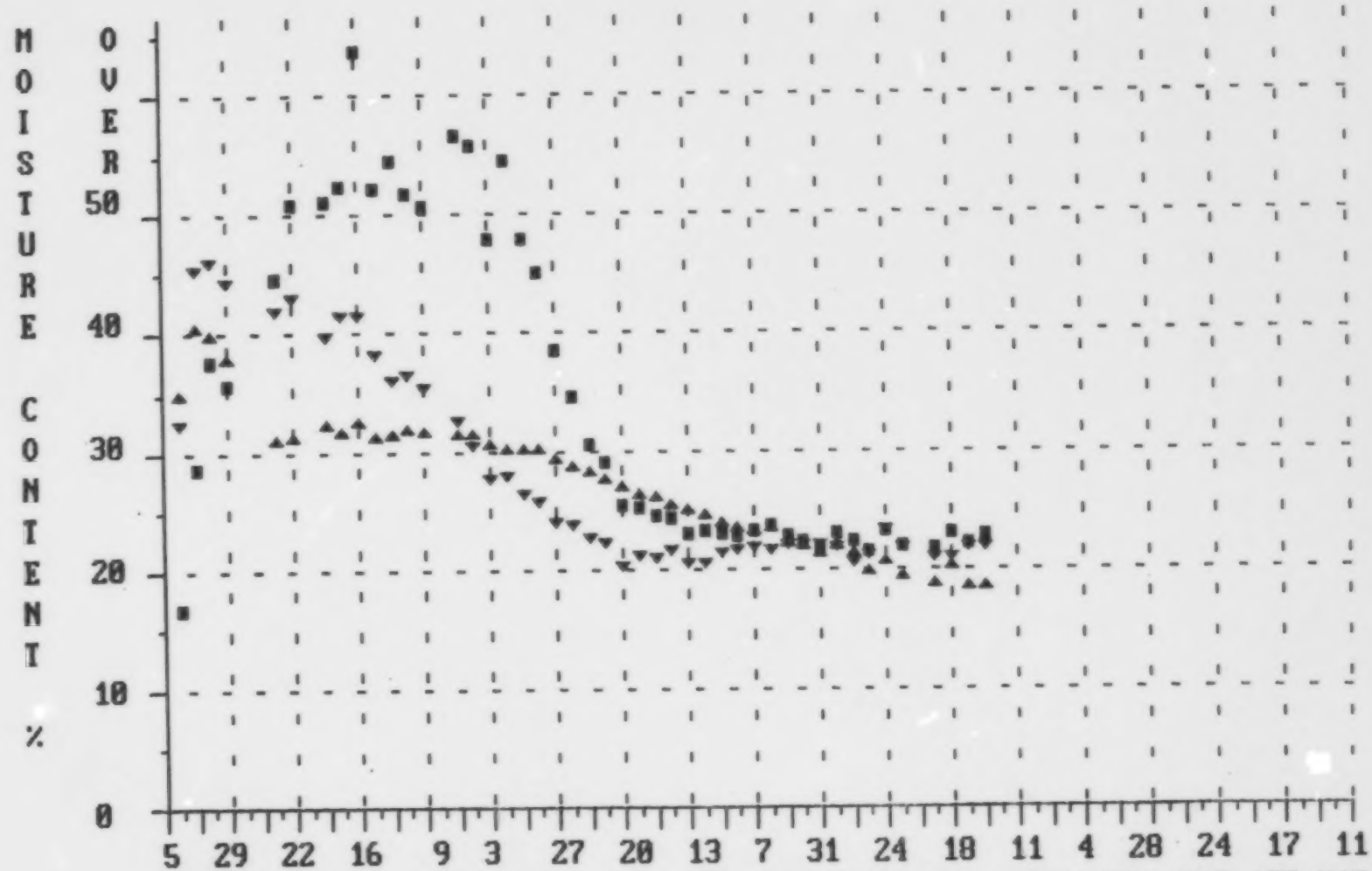

MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 28 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

HALIFAX, N.S. - PANEL # 2, NORTH, STRAPPED WAFERBOARD SHEATHING.

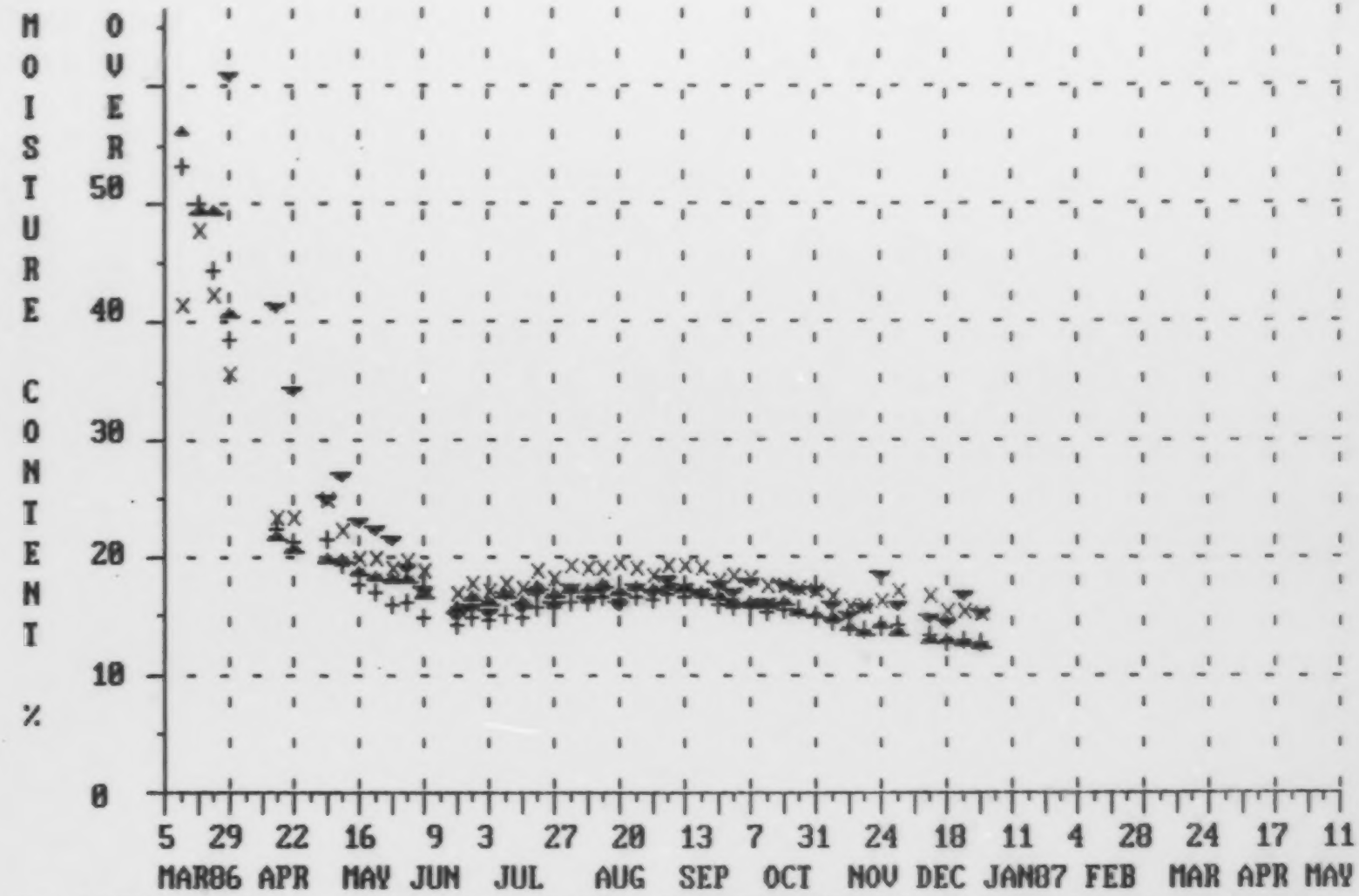

MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY
HALIFAX, N.S. - PANEL # 7, NORTH, NON-STRAPPED CELLULOSE.


MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

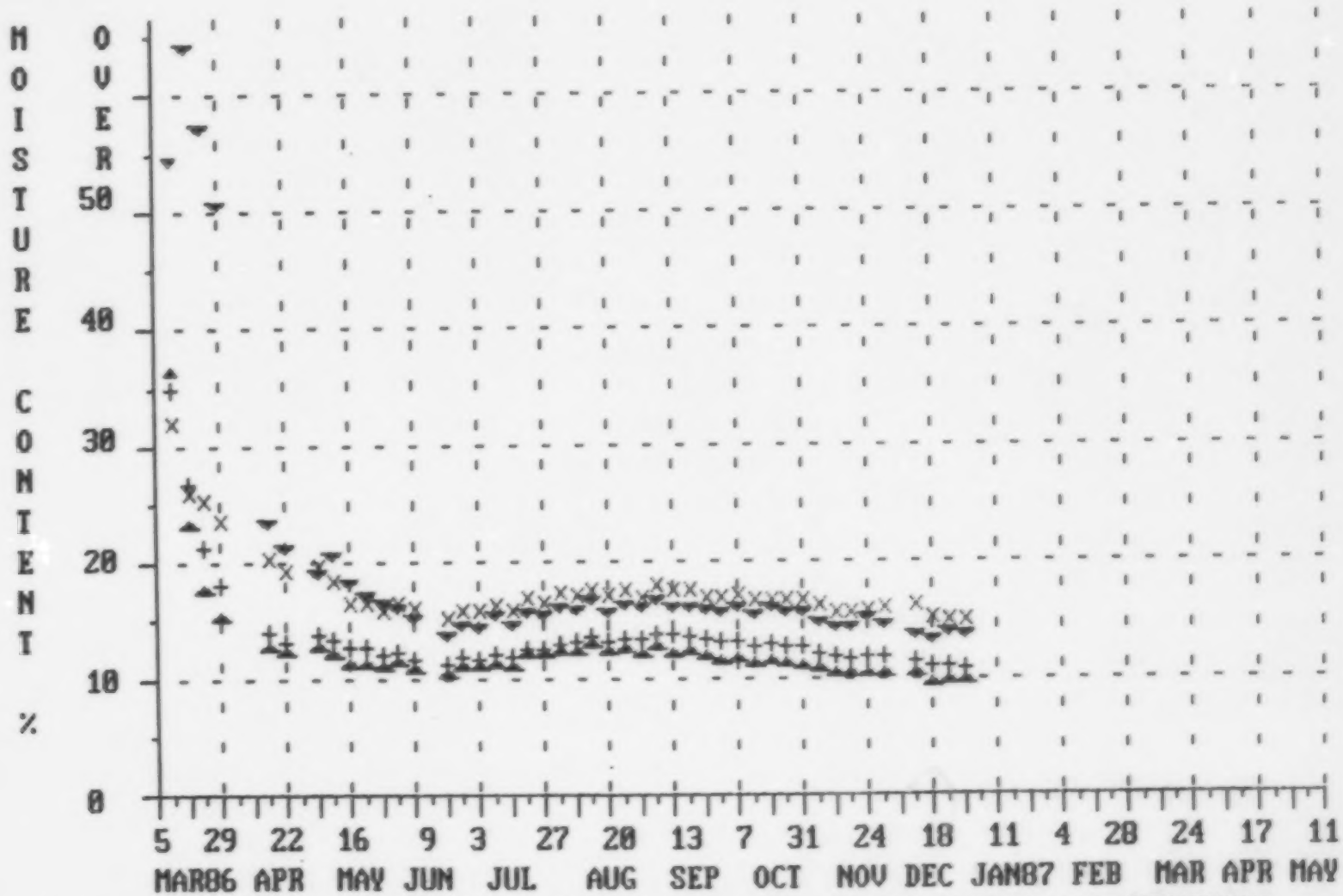
ST. JOHN'S, NFLD. - PANEL # 1, SOUTH, NON-STRAPPED WAFERBOARD SHEATHING.


MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

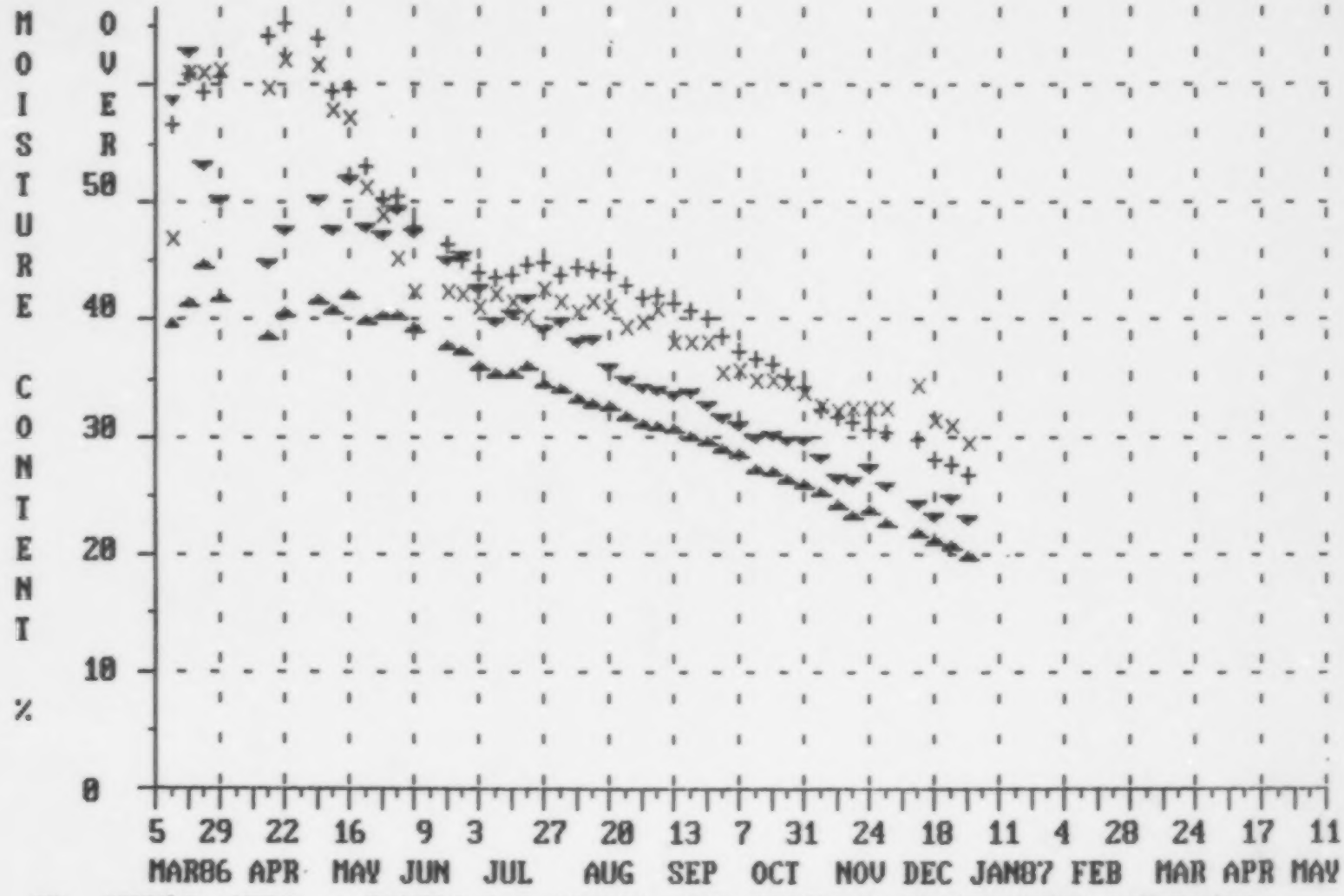
ST. JOHN'S, NFLD. - PANEL # 2, SOUTH, STRAPPED WAFERBOARD SHEATHING.


MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

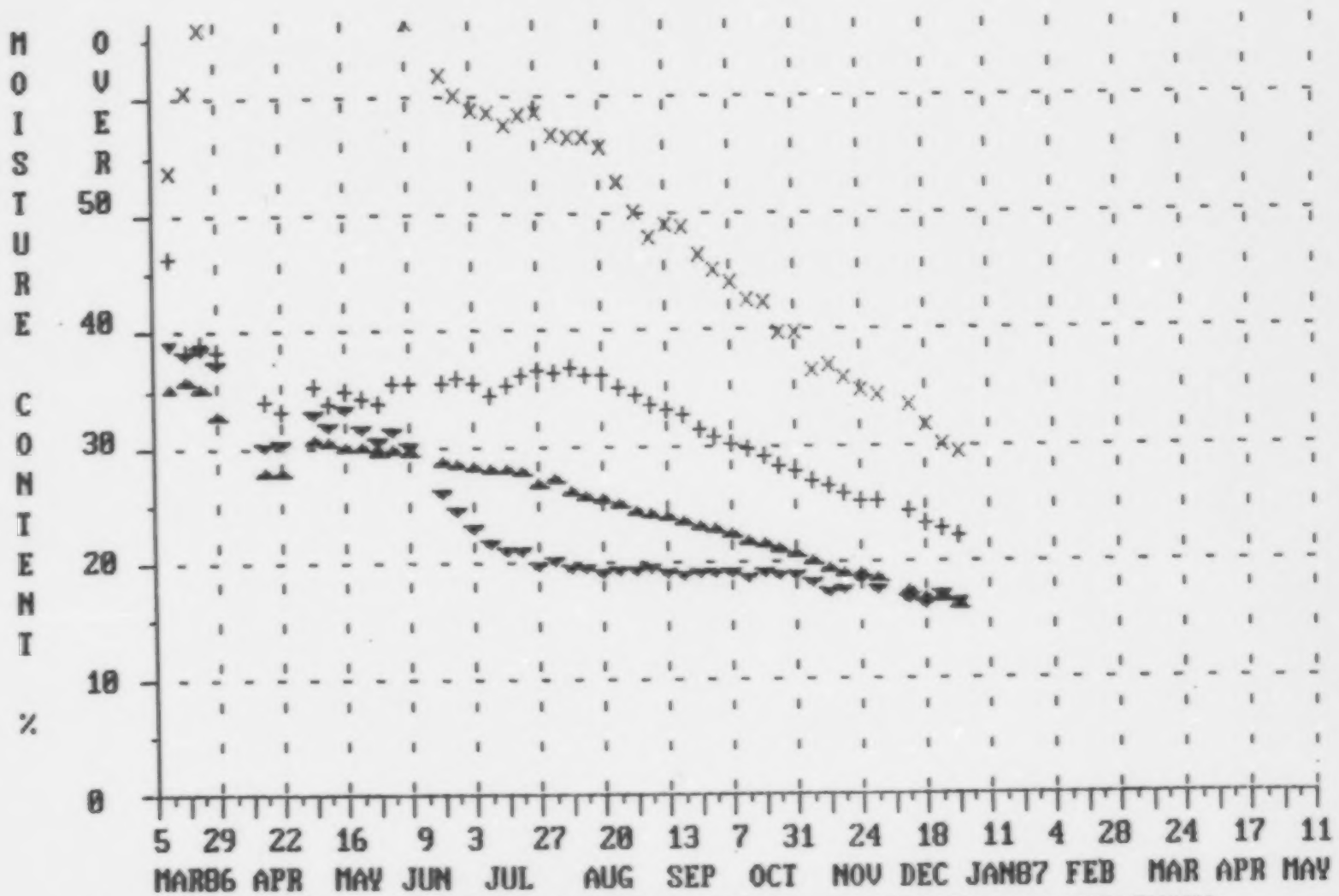
ST. JOHN'S, NFLD. - PANELS # 3 (BOTH), NON-STRAPPED RIGID FIBERGLASS SHEATHING.


MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

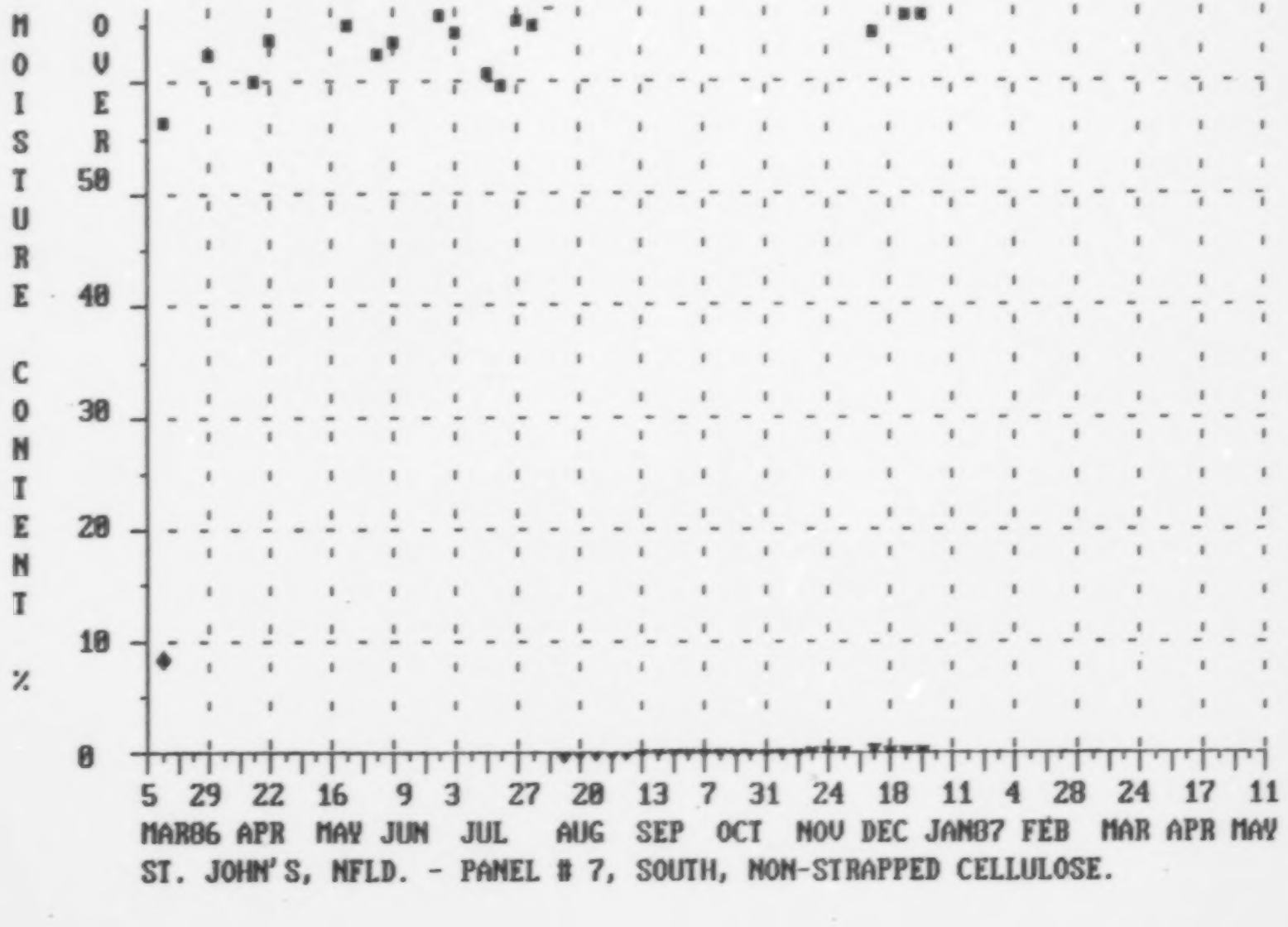
ST. JOHN'S, NFLD. - PANELS # 4 (BOTH), STRAPPED RIGID FIBERGLASS SHEATHING.

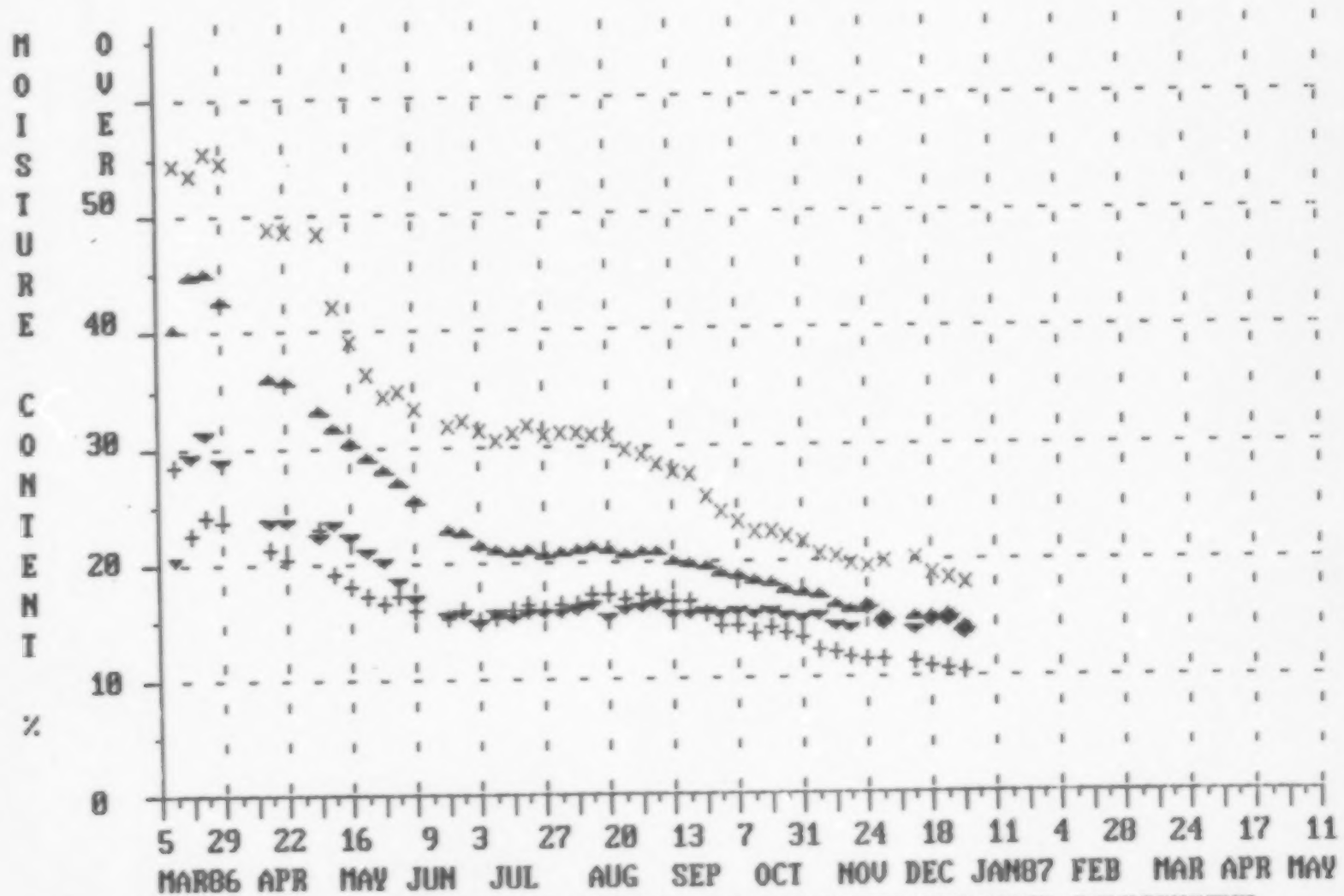

MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

ST. JOHN'S, NFLD. - PANELS # 5 (BOTH), NON-STRAPPED POLYSTYRENE SHEATHING.

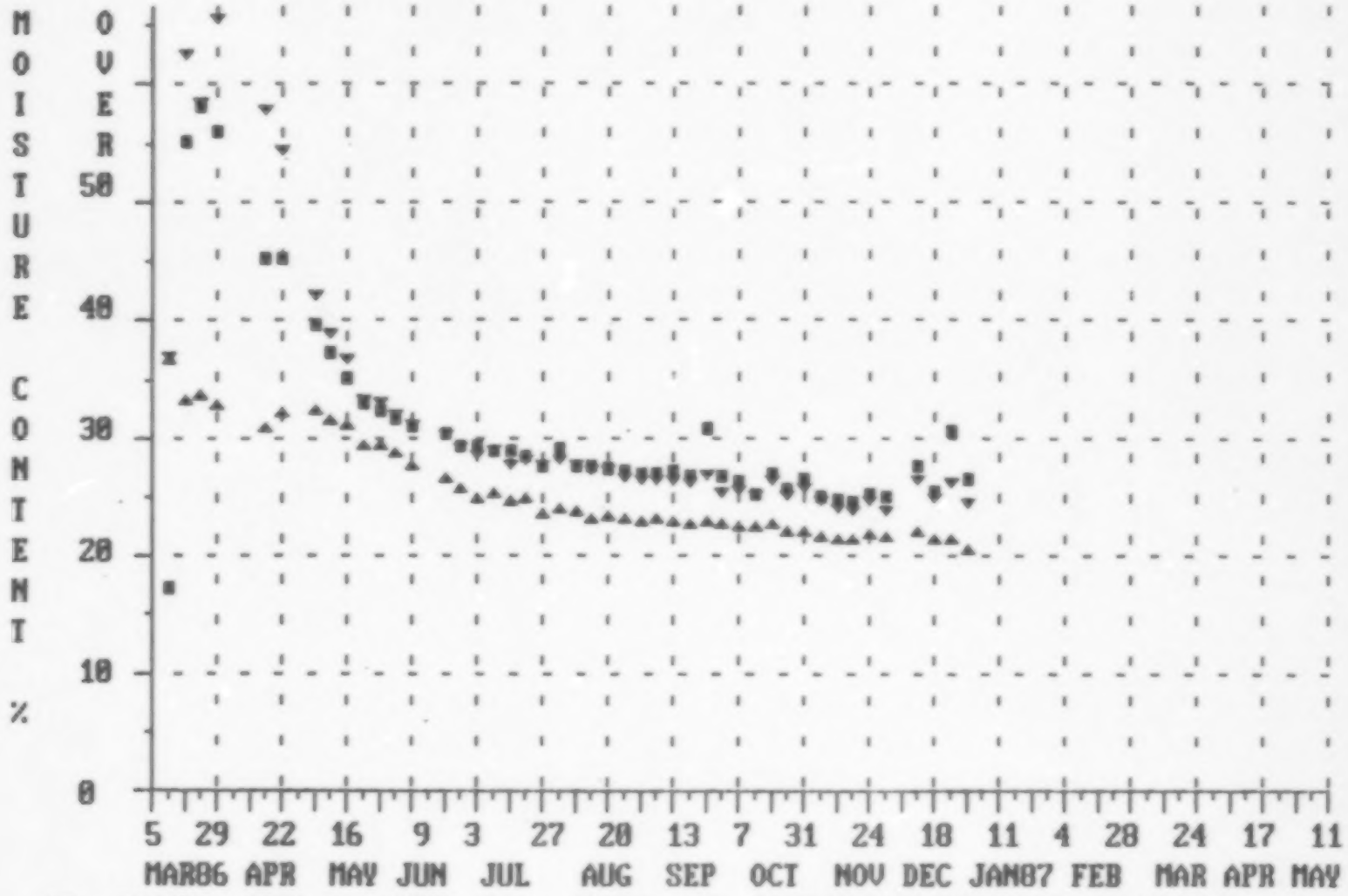

MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

ST. JOHN'S, NFLD. - PANELS # 6 (BOTH), STRAPPED POLYSTYRENE SHEATHING.

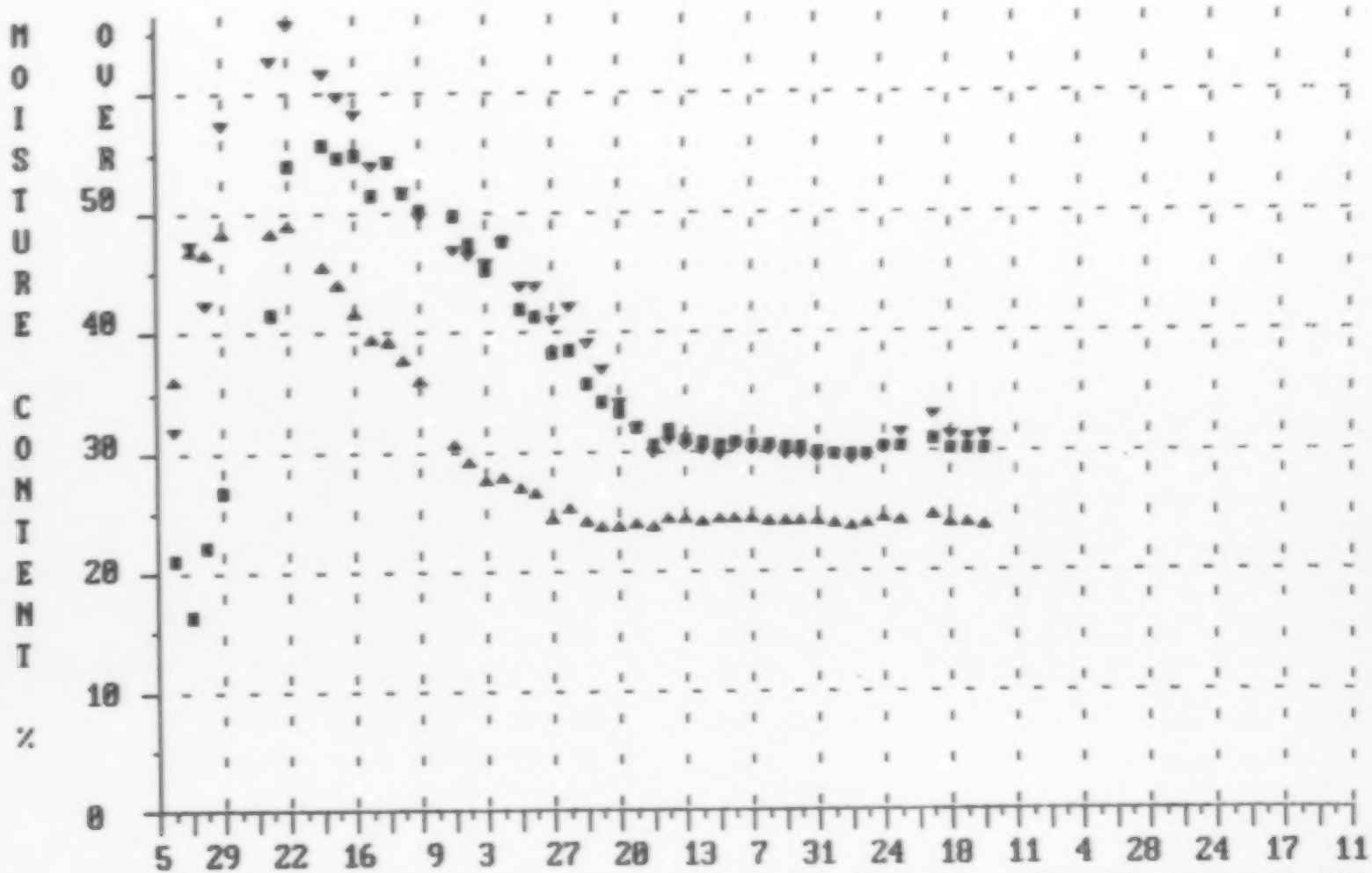

MOISTURE CONTENT %
OVER 50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY
ST. JOHN'S, NFLD. - PANEL # 7, SOUTH, NON-STRAPPED CELLULOSE.


MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

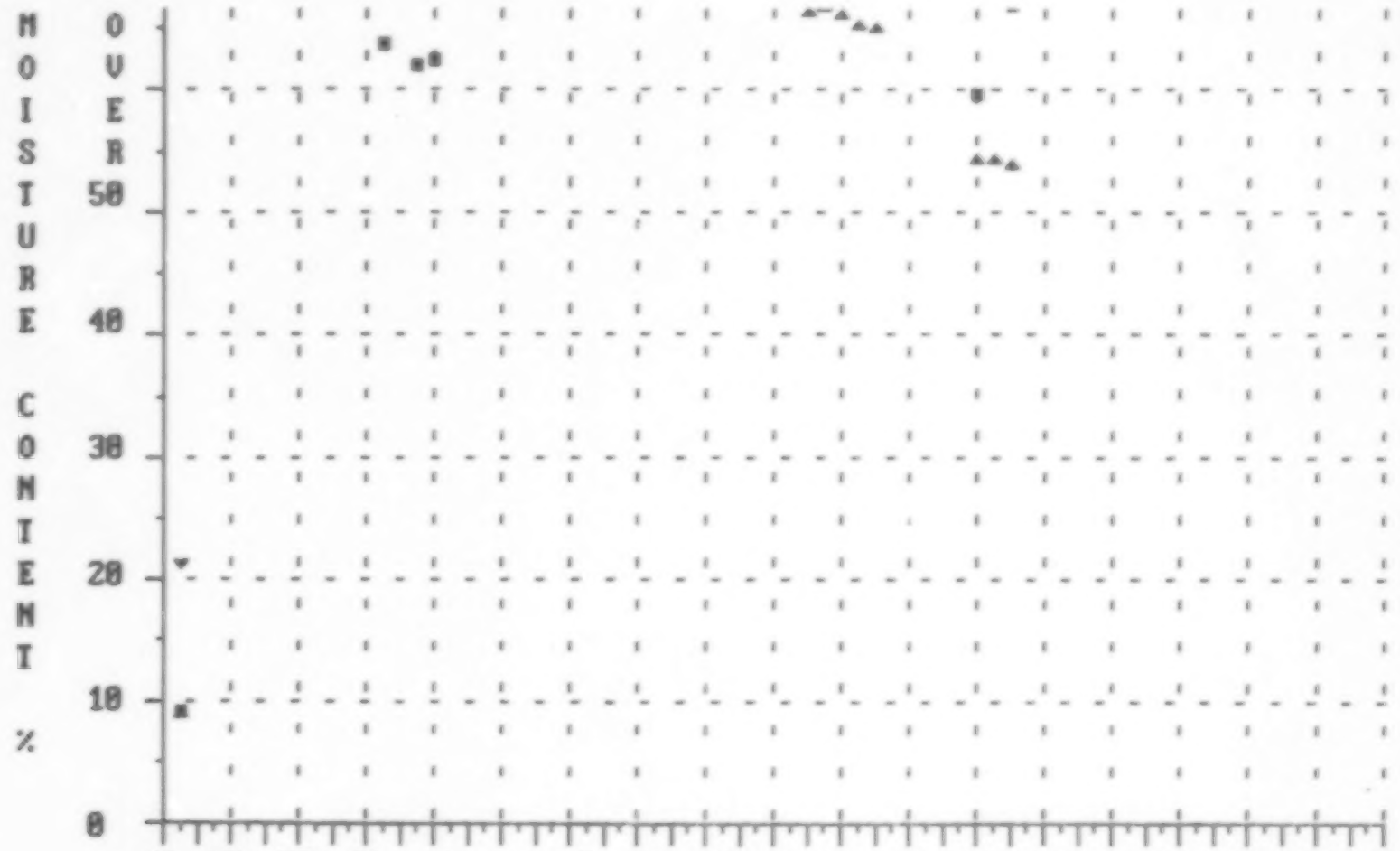
ST. JOHN'S, NFLD. - PANELS # 8 (BOTH), NON-STRAPPED EXPANDED POLYSTYRENE.


MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

ST. JOHN'S, NFLD. - PANEL # 1, NORTH, NON-STRAPPED WAFERBOARD SHEATHING.

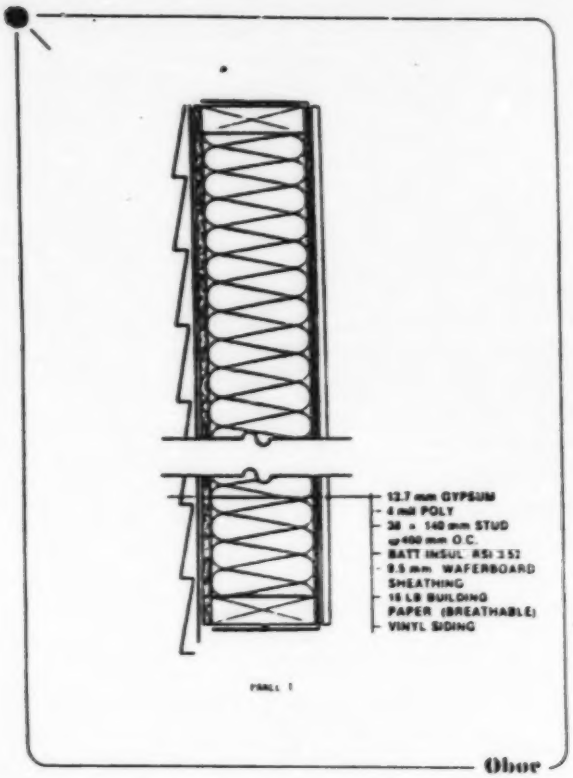

MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

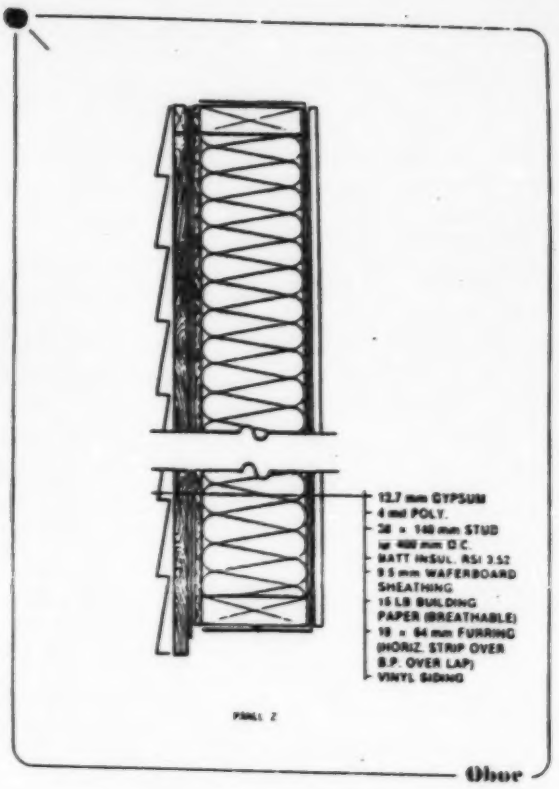
ST. JOHN'S, NFLD. - PANEL # 2, NORTH, STRAPPED WAFERBOARD SHEATHING.

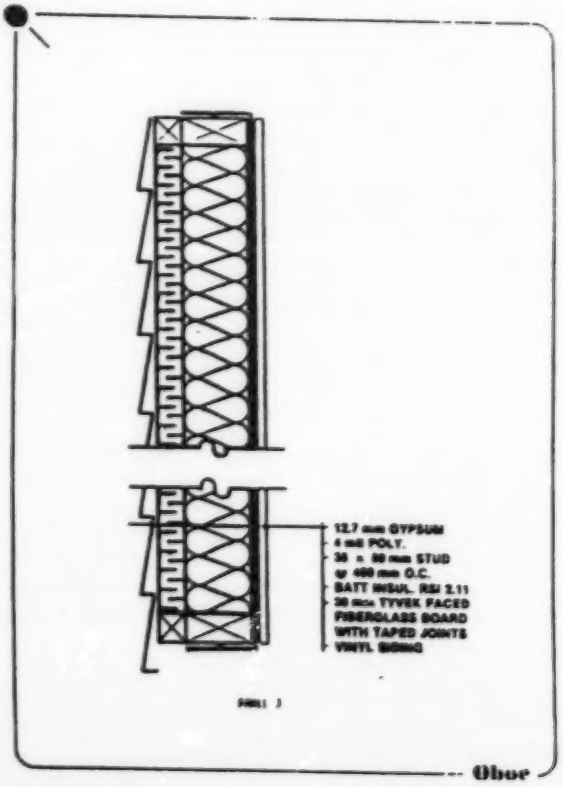

MOISTURE CONTENT %
OVER
50
40
30
20
10
0
5 29 22 16 9 3 27 20 13 7 31 24 18 11 4 28 24 17 11
MAR86 APR MAY JUN JUL AUG SEP OCT NOV DEC JAN87 FEB MAR APR MAY

ST. JOHN'S, NFLD. - PANEL # 7, NORTH, NON-STRAPPED CELLULOSE.

APPENDIX 3


12.7 mm GYPSUM
4 mil POLY
38 x 140 mm STUD
@ 400 mm O.C.
BATT INSUL. RSI 3.52
9.5 mm WAFERBOARD SHEATHING
15 LB BUILDING PAPER (BREATHABLE)
VINYL SIDING
Oboe


12.7 mm GYPSUM
4 mil POLY.
38 x 140 mm STUD
@ 400 mm O.C.
BATT INSUL. RSI 3.52
9.5 mm WAFERBOARD SHEATHING
15 LB BUILDING PAPER (BREATHABLE)
19 x 64 mm FURRING (HORIZ. STRIP OVER B.P. OVER LAP)
VINYL SIDING
Oboe


12.7 mm GYPSUM
4 mil POLY.
38 x 89 mm STUD
@ 400 mm O.C.
BATT INSUL. RSI 2.11
38 mm TYVEK FACED FIBERGLASS BOARD WITH TAPED JOINTS
VINYL SIDING
Oboe

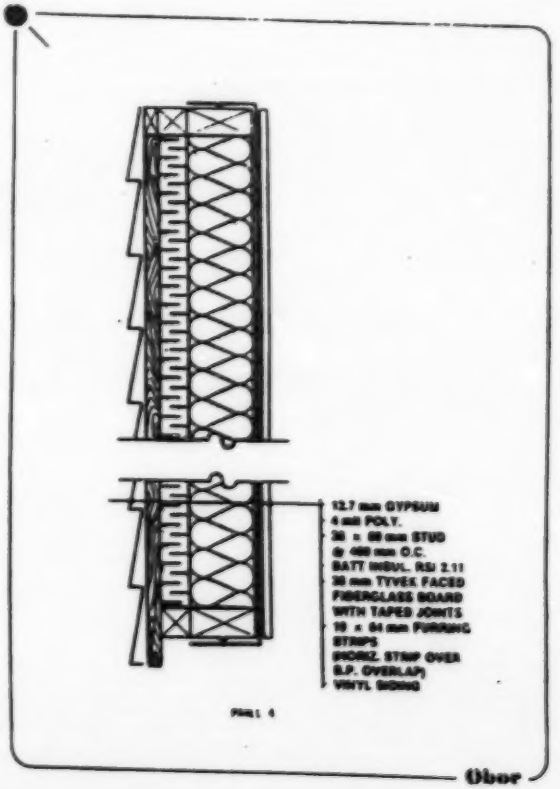
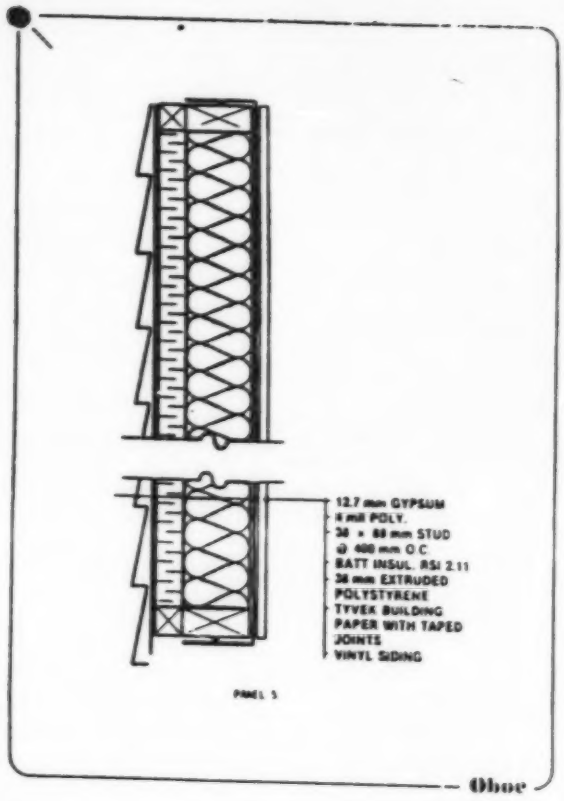
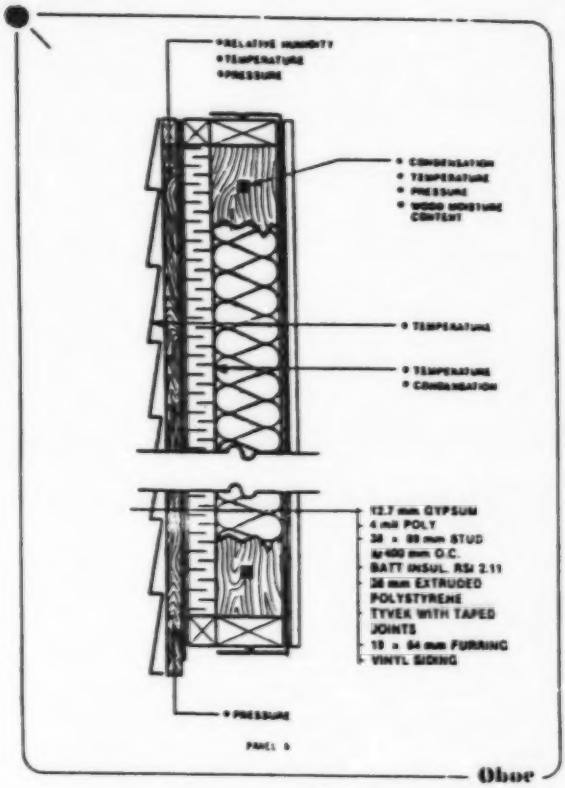
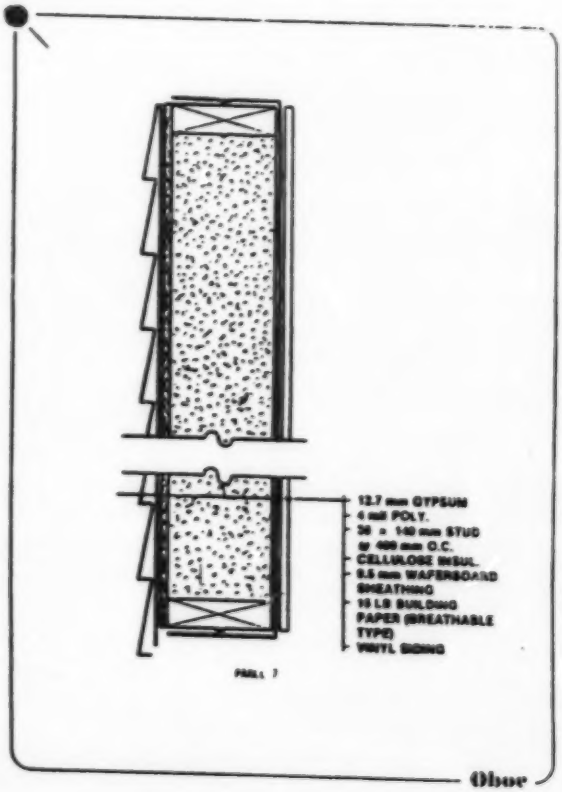

12.7 mm GYPSUM
4 mil POLY.
38 x 89 mm STUD
@ 400 mm O.C.
BATT INSUL. RSI 2.11
38 mm TYVEK FACED FIBERGLASS BOARD WITH TAPED JOINTS
19 x 64 mm FURRING STRIPS
(HORIZ. STRIP OVER B.P. OVERLAP)
VINYL SIDING
Oboe

FIGURE 1


12.7 mm GYPSUM
4 mil POLY.
38 x 89 mm STUD
@ 400 mm O.C.
BATT INSUL. RSI 2.11
38 mm EXTRUDED
POLYSTYRENE
TYVEK BUILDING
PAPER WITH TAPED
JOINTS
VINYL SIDING
Oboe


12.7 mm GYPSUM
4 mil POLY
38 x 89 mm STUD
@ 400 mm O.C.
BATT INSUL. RSI 2.11
38 mm EXTRUDED
POLYSTYRENE
TYVEK WITH TAPED
JOINTS
19 x 64 mm FURRING
VINYL SIDING
Oboe


12.7 mm GYPSUM
4 mil POLY.
38 x 140 mm STUD
@ 400 mm O.C.
CELLULOSE INSUL.
9.5 mm WAFERBOARD
SHEATHING
15 LB BUILDING
PAPER (BREATHABLE
TYPE)
VINYL SIDING
Oboe

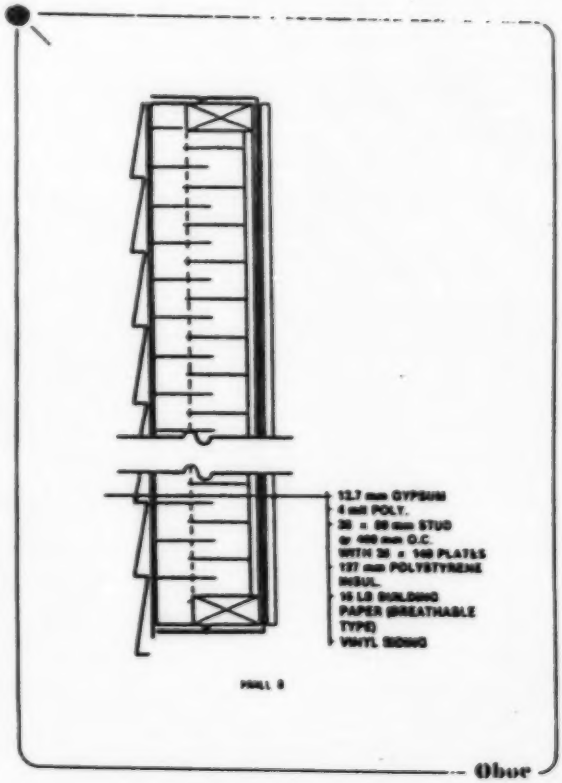

12.7 mm GYPSUM
4 mil POLY.
38 x 89 mm STUD
@ 400 mm O.C.
WITH 38 x 140 PLATES
127 mm POLYSTYRENE
INSUL.
15 LB BUILDING
PAPER (BREATHABLE
TYPE)
VINYL SIDING
Oboe

FIGURE 2